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**INTELLIGENCE TESTING AND THE
COMPREHENSIVE SCHOOL**

INTELLIGENCE TESTING
AND THE
COMPREHENSIVE SCHOOL

by
BRIAN SIMON

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PREFACE

EVERY now and then there appears a book which makes a big, even a decisive, impact on developments in the particular field with which it deals. I venture to suggest that this will prove to be such a book.

It tackles the most topical and one of the most fundamental problems of British education. Have we achieved "secondary education for all", the reform that was the keystone of the Education Act, 1944? If not, why not? What are the fundamental misconceptions and practices that stand in our way?

Mr. Simon puts his finger on the spot. He shows how the practice of intelligence testing is used to justify the curtailment of opportunity from the junior school onwards; he shows also how theories based on intelligence testing uphold a form of school organisation, and forms of teaching, which make secondary education for all impossible.

Mr. Simon has had a varied educational experience—in central, secondary modern, all-age, and grammar schools, followed by a university education department—which brought the problem of intelligence testing home to him and caused him to study the subject. He here explains, in a brief space and with admirable lucidity, how tests are constructed and given and how the results are interpreted and used. His criticisms will greatly strengthen and clarify the present, mainly instinctive, rebellion of parents, teachers and administrators against methods of selection at 10 plus.

The ground cleared of many misconceptions, Mr. Simon points the way forward—the Comprehensive School. Though he can necessarily only deal with the subject in brief outline, he makes a clear exposition of the case for this, the only method of providing a real secondary education for all.

G. C. T. GILES.

ACKNOWLEDGEMENTS

I HAVE to thank many practising teachers in all types of school, including the new London comprehensive schools, for the benefit of frequent discussions on the issues raised in this book, more particularly in Chapters I and V.

My thanks are also due to Mr. J. C. Daniels, who has given me valuable assistance with the sections on intelligence testing.

I gratefully acknowledge the permission of the University of London Press to reproduce some figures from *A Guide to Mental Testing*, by R. B. Cattell, and of Cassell and Company and Sir Cyril Burt to reproduce some figures from *Intelligence and Fertility*, by Sir Cyril Burt.

B. SIMON.

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CHAPTER I

THE DIVIDED SYSTEM OF EDUCATION

The School and the Parent

A CHILD's school life between the ages of seven and eleven is often a closed book to his parents. A few children will talk volubly about the happenings of the day when they come home to tea; but most tend to regard school as a world to be kept secret from their parents, a sphere of activity where they lead an independent life. This is a natural reaction and one that most parents respect.

Even when a child does talk about the teachers or about lessons, no clear picture of the school's organisation and aims can be built up. Young children have no other course than to take what happens at school for granted; they can hardly question or criticise. They are naturally unlikely to see what is significant and important in school organisation and activity and to hand on a clear picture to their parents.

The parents who, according to the law, deliver their child to school at the age of five are, then, sending him out into a relatively unknown world. Though at many nursery and infant schools a fairly close contact between teachers and parents is maintained, with the child's transfer to the junior school at seven this contact is usually broken. Most parents have neither the time nor the knowledge, nor possibly the means, of finding out much about how the school is run. An occasional visit on an open day and perhaps a single interview with the head teacher may be all the contact that they achieve.

Only where there is an active parents' association will they have any real opportunity of hearing talks on the work of the school and meeting the teachers. In general, however, they will assume that the teachers are skilled practitioners, that they know their job, and that it is not the parents' business to interfere.

Most parents, however, have fairly definite opinions about their own child. They know the things he is good at and have a fair idea where his weaknesses lie. What do they expect

from the junior school? Probably not more than that it will give their child the opportunity to learn, to develop those activities to which he seems particularly suited, to bring him on where he is backward, and, in general, to give him a systematic, useful education, especially in the basic subjects, so preparing him for further education. They will also expect their child to have as fair a chance of these things as any other child attending a State school.

Perhaps the mother may pass by her child's school during the day. During lesson time all will appear quiet and orderly to the outsider. She may catch a glimpse through the ground-floor window of a class of children busily writing, or of the teacher at the blackboard, the children with heads raised, listening; she may see a physical education lesson in the school yard, or hear a class singing in the assembly hall. The children are learning new skills, new activities. Or if she passes during the break, she will see the children surging across the playground, shouting, singing, playing games, running about at a breakneck speed, but by some sixth sense never colliding. The air is full of the noise children make when released for a few minutes from the necessary constraint and discipline of the classroom.

Seen in this way, the school seems outwardly to have a single purpose. It appears to be a place where all children are taught to master the basic skills and activities necessary to social life, where they learn to make friends, to realise their own personality, and to prepare for their later independence and maturity.

Such, at least, is the apparent purpose of the junior school.

One School or Three

But penetrate within the school, examine its structure and organisation in detail, and the outward appearance of unity is at once shattered.

It is perfectly true that the school day usually starts with an assembly of all the children, when the head teacher sometimes talks about matters of interest to the school as a whole. It is also true that the children come together at play-time,

sometimes for games, and to a lesser extent for activities run by the teachers out of school hours.

But for the main business of the school—that is, for teaching—there exists not one school, but two, three, and sometimes even four different “schools”. These “schools within a school” can best be likened to conveyor belts, moving at different speeds, and moving also progressively further apart. It is a fact, little appreciated by many parents, that only those children who have obtained a place on the fastest of these belts have any real chance of being deposited in a grammar school at the age of eleven. The decisive step influencing the future career of any child is made, not at ten or eleven, but at seven or often even at six, when the child is still in the infant school.

Almost every junior school in the country is organised in this way. Schools are described as two-stream schools or three-stream schools, indicating the number of parallel classes for the different years, and implying, not only movement at a different pace, but also the existence of banks separating one stream from the other.¹

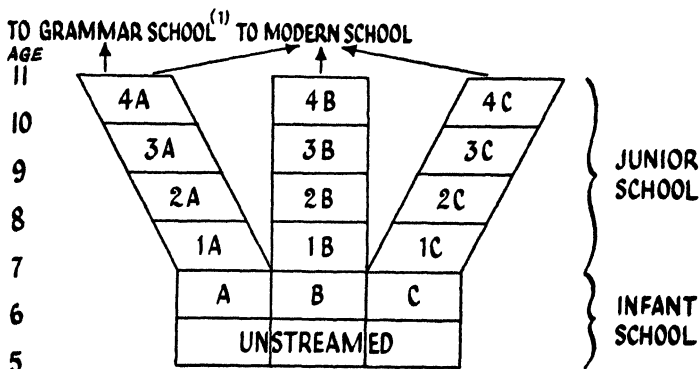
Streams are normally called “A”, “B” and “C”, “A” being the quick stream and “C” the slow. The “B” stream is betwixt and between. Big schools with an intake of more than 120 children each year will also have a “D” and even an “E” stream. This system permits of a “streamlined” education, although such a conception will seem to some to contain a contradiction.

As a matter of fact, teachers, who are practically forced to organise schools in this way, often seek to hide the fact that the schools are “streamed” from the pupils. This they do in the interests of the children, who are, of course, very sensitive to the judgments of adults, and who like to receive encouragement in their efforts to master knowledge and skills. To label a class “C” makes it fairly clear to the children what their teachers think of them. As a result, these children are not unnaturally liable to get dispirited, and to lose confidence in their own abilities.

¹ Some schools in country districts, and a few in the towns, are not large enough to allow for this form of organisation.

In many schools, therefore, the streams are not labelled "A", "B" and "C", but "X", "Y" and "Z", or even "P", "Q" and "R". Sometimes they are called after the initials of their teachers. Occasionally, even Greek letters are used, perhaps on the theory that children of eight or nine are not likely to understand this language. There is no end to the ingenuity of teachers in evolving methods of concealing this system of organisation from the children. But in spite of all these precautions, the children normally manage to penetrate these defences. It is very difficult to conceal the truth from children, especially in a matter that so intimately concerns them.

Once a child is placed in the "A", "B" or "C" category at the age of six or seven, he is almost certain to remain in it as he grows older. The reasons for this will be discussed later. The result, however, is clear. It is that the average junior school of 480 children usually consists not of one but of three schools, with a divided internal structure as outlined below.



Streaming, Its Cause and Effect

This form of organisation is forced on the schools by the selection examination, popularly known as the "scholarship", which is usually taken at the age of ten. Success or failure in this examination determines the kind of secondary school to which the child will go at eleven.

¹ The proportion of the "A" class who win places in grammar schools varies, of course, from school to school and year to year.

It is well known that this examination is highly competitive, much more so to-day than before the 1944 Education Act, in spite of the increase in the number of grammar school places. Very many parents feel, rightly or wrongly, that their children should go to the grammar school; but, in fact, on an average in the country as a whole, there is room for only one child in five in these schools. Nevertheless, most parents expect the junior schools to prepare their children so that they will be able to jump the hurdle of the examination successfully.

At the same time, junior school headmasters and teachers like to get a good proportion of their children through the examination. Teachers are very anxious to do the best they can for the children under their care, and many feel that to make a special effort to get more children a place in a grammar school is well worth while. A child who goes to such a school has the opportunity to gain qualifications necessary for all the better jobs, and the grammar school also opens up the road to the university and the professions. Naturally, a junior school teacher will take a pride in sending on as many of his pupils as possible to a school which can offer these opportunities.

But it has been shown by experience that the *simplest* way of getting the largest number of boys and girls through this examination is to stream; to test all the children as early as possible, pick out those who appear to be the most advanced, put them together in one class and press on, as quickly as possible, especially with those subjects in which the children will eventually be examined. The "A" stream is therefore formed, as soon as the children come into the school at seven, though in many cases they have already been partially sorted out in the infant school, and come up, as it were, already hand-picked. The "B" and "C" streams similarly take shape.

As soon as a school is streamed, a certain rigidity is bound to set in. In the "A" stream are to be found all the children who can read well, write well and do sums well. In the "C" stream are all the children who cannot read or write, or who are only beginning to make out the words with difficulty and who are not good with figures. It is therefore not surprising that, by the end of the year, the "A" stream will have made comparatively

greater progress than the "C" stream, where many of the children may not even have reached the point from which the children in the "A" stream began.

Towards the end of the year, the head teacher, wishing to be fair and to give each child the opportunity that he seems to merit, may decide to give a test to the whole year, in order to help him decide whether some children should be moved from the "B" to the "A" stream, or vice versa.

To give such a test fairly, he must set the same questions to all the children. But in arithmetic, for instance, the "A" stream will normally have got considerably further ahead than the "B" stream, and will certainly be a long way ahead of the "C" stream. Inevitably, the results of his test will show "A" children at the top, "B" in the middle and "C" at the bottom.

Here is the result of such a test in English and arithmetic done recently by children aged ten at a two-stream junior school (the marks on the different papers are combined):¹

Position	Mark	Stream	Position	Mark	Stream	Position	Mark	Stream	Position	Mark	Stream
1	129	A	{ 17	111	A	{ 32	97	A	{ 47	90	B
2	125	A	{ 17	111	A	{ 32	97	B	{ 47	90	B
3	124	A	{ 19	110	A	{ 34	96	A	{ 47	90	B
{ 4	120	A	{ 19	110	A	{ 34	96	A	50	89	B
{ 4	120	A	{ 21	108	A	{ 36	95	B	51	88	B
6	119	A	{ 21	108	A	{ 36	95	A	{ 52	87	B
{ 7	118	A	{ 23	107	A	{ 36	95	A	{ 52	87	B
{ 7	118	A	{ 23	107	A	{ 39	94	B	54	86	B
{ 9	117	A	{ 25	106	A	{ 39	94	B	55	84	B
{ 9	117	A	{ 25	106	A	{ 41	93	B	{ 56	82	B
11	116	A	27	104	A	{ 41	93	B	{ 56	82	B
12	115	A	28	103	A	43	92	B	58	81	B
13	114	A	29	102	A	{ 44	91	A ²	{ 59	80	B
14	113	A	30	100	B	{ 44	91	B	{ 59	80	B
{ 15	112	A	31	98	B	{ 44	91	B	61	76	B
{ 15	112	A							62	75	B

¹ Classes are unusually small in this school, as it is situated in an area where the child population is declining.

² This child was in the "B" stream throughout the school, until the final year, when he was transferred to the "A" stream. He was not, however, able to catch up with the others.

These results may lead the headmaster to suppose that his original sorting out of children has been amply confirmed. If there are one or two "B" children with higher marks than one or two of those in the "A" class, as there are in the example given above, he will probably transfer them. But in the main there will be no change. The tests used seem to reflect the "abilities" of the children and to justify the whole process of streaming.

But, of course, it often happens that the "B" and "C" streams have not even covered the syllabus on which the test is set, and so may never have been given the chance of mastering the techniques required to answer some of the questions. Even if they have covered the syllabus, they will probably not have done so as intensively, and they will have had less practice, since the teacher had to start at an earlier point and could not go so quickly as the teacher of the "A" stream. Results, such as those given above are, therefore, by no means surprising. They do not so much warrant conclusions about the abilities of the children as simply reflect the inevitable results of streaming. They indicate also how it is that the divisions between streams tend to widen as the child moves up the school, so that transfer between streams becomes progressively more difficult. From this follows the tremendous importance to the individual child of his original placement in a particular stream when he first enters the junior school. If he is allocated to the "C's" at the age of six or seven, it is practically certain that he will still be in a "C" stream at the age of ten or eleven, when the examination is taken.

The decision taken at this early age, based, as it normally is, on the child's ability in reading, writing and arithmetic, often determines his future. What, then, are the most important influences affecting the child's abilities in these subjects at the age of six or seven?

There are, of course, many reasons why some children are much better than others at reading, writing and arithmetic, when they first enter the junior school.

If a child comes from a home where the parents often tell him stories, where they read to him and take trouble to buy

him suitable books, where they encourage him to paint, to draw, to write, and generally to express himself, then it is almost certain that by the age of six he will be talking fluently, reading well, and be generally interested in new activities. Such a child will almost automatically find himself in the "A" stream.

The parents of another child may rarely read anything but the newspaper. They may lack the facility for telling the kind of stories that appeal to children and so arouse the imagination. Possibly the father may be too tired after a hard day's work and travelling to give his child much attention; or the constant battle to make ends meet, perhaps with a large family and a small house, leaves the mother with little time for extras. The child of these parents is left a good deal on his own. He may develop all kinds of abilities, learning to fend for himself and developing initiative and independence beyond his years. But he may not learn to express himself clearly, and his reading and writing will progress slowly; he will more than probably find himself with the "C's".

The infant school cannot equalise these differences, and indeed, when it also is streamed, it does not set out to. Many children leave infant schools still unable to read or write.

And because some children enter the junior school at seven with less equipment of a certain kind than others, often for reasons which have nothing to do with character, interest or intellect, their paths will diverge from the start and will never meet. The former are labelled backward, the latter bright, and the labels will stick. The junior school teachers are necessarily affected by the class with which they are confronted, and affect it in turn. The "A's" are more rewarding, more interested in new activities; the "C's" have first to be provided with the necessary background before even reading has any meaning. And so the distance between the streams becomes more marked as the children go through the junior school. Moreover, even though it is usual to keep the "C" class smaller than the others, it is often too large to allow for much individual attention, which backward children particularly require to initiate them in reading and writing. As a

result, semi-literacy or even illiteracy may not be overcome at one end of each age group in the junior schools, while at the other the children are being rigorously drilled in the basic subjects of the selection examination.

The normal junior school, therefore, is almost inevitably organised, not so much with the aim of providing the best possible education for all the children, as with that of obtaining the greatest number of "scholarships" or passes in the selection examination at ten. The tragedy is that many people, including some teachers, regard these two aims as synonymous. In fact, they are mutually exclusive.

Even the "A" stream, the few favoured children, do not get "the best possible education". The selection examination is ahead and profoundly affects the curriculum. "Some headmasters," stated Mr. R. Morley, an experienced teacher, in the House of Commons recently, "have moulded the whole of their curriculum around the grammar school entrance examination. From the time the child comes into the primary school at the age of seven, his attention is directed towards (this) examination. The whole of the primary school curriculum is distorted and warped . . . and this warping . . . is a very evil thing."¹

The headmasters concerned could well argue that they are only doing efficiently what the system requires of them. But that this distortion of junior school education is widespread is commonly admitted. In some schools it goes so far that Mr. Clegg, the Chief Education Officer for the West Riding, has felt impelled to write: "If the Committee were to decide that henceforth they would select for grammar schools solely on the children's ability to do long division, this form of calculation would be the main and most serious occupation of certain junior schools for the whole of their four-year course, to the detriment of many other activities which ought to be occupying those years."²

Even for children in the "A" classes, therefore, what should be education tends to become a narrow training

¹ *Hansard*, February 17th, 1953, 311-2.

² A. B. Clegg, "Some Problems of Administration in West Riding Grammar Schools", University of Leeds Institute of Education: *Researches and Studies*, January, 1953, VII, 9.

in a few subjects. To achieve the necessary conditions for this concentration on the few, the rest of the school is separated into divisions which, it might be argued, tend to create the very backwardness which the school, in theory, exists to overcome. Actually, the "B" class often becomes a pale reflection of the "A" class, following the same narrow curriculum several steps in the rear; there is still a faint hope of a successful examination result here, at least in some schools. The "C" class, however, deprived of the stimulation of those who find the subjects easier and more interesting, and conscious of their position in the school, find the struggle for literacy a hard and often unrewarding task, in spite of the help of the most devoted teachers.

Summarising the effects of this system from the children's point of view, it may be said first, that it practically determines their future at the age of six or seven; second, that it leads to a mechanical and distorted form of education; and third, that it isolates the children from each other, and so breaks up the unity of the school.

From the teachers' point of view, streaming is usually justified on the grounds that it is easier to teach a class with a roughly similar level of attainment, especially where there are forty-five or fifty children in a class. Most people would admit that there is some truth in this contention, though if it is "easier" to teach an "A" class, it is probably more difficult to teach the "C's". There are many points which could be made here, both for and against, but at the moment this discussion is not relevant. We are not concerned with what is the "easiest" way of teaching, but with the effect that present methods have on children. If this is bad, then, however difficult it may be, new methods should be evolved; if this means changing the structure of the educational system, the necessary changes should be made.

Some pioneers among junior school heads who find the system, with its attendant evils, abhorrent to their educational purposes, have abolished streaming in their schools. This is not an easy thing to do. It may meet with opposition within the school, since some of the teachers, especially those who regard

themselves as "A" stream teachers, may oppose the change; it may involve standing out against external pressure; above all, it requires a re-thinking of the whole question of the content and methods of education to meet the new conditions of teaching and the new purposes. But where success is achieved, as it has been, such a school presents a challenge to the educational world, embodying a more humanist conception of education, and showing that there is an alternative which can be put into practice now, given the necessary conviction, energy and skill.

Nevertheless, these pioneer schools are fighting a difficult battle, and it would be illusory to suppose that their example can be widely followed while selection at ten continues to operate.

The Great Divide

In his last year at the junior school, the crucial moment comes, the child sits the selection examination.

Everyone knows the heart-burnings caused by this examination in innumerable homes throughout the country. This is the moment that has been prepared for, for weeks and months and years. It marks the parting of the ways, and in this sense it determines the child's future.

What is not so generally recognised is that for some 60 per cent. of the children the die was already cast four or five years before, when they were first placed in lower streams. Many of these children, however, now go through the farce of taking the examination. In this way, the illusion that they have an equal chance is fostered.

For one or two days the children write busily on printed sheets of paper, usually filling in one word answers to questions in English, arithmetic and "intelligence";¹ some, like Sir Winston Churchill at the Harrow entrance examination, may only succeed in making a large blob of ink, but they are unlikely to be selected as he was.

¹ Recently some local authorities have included compositions and comprehension tests in addition to the so-called "objective" tests in English, arithmetic and "intelligence".

Teachers then spend hours (at very low pay) marking each question mechanically with the aid of a key, and totting up the marks. The papers are then sent to a central office, where marks are added to other marks, and age allowances and other modifications mathematically calculated. A list of the children in their final order is eventually made out. The dividing line between "pass" and "fail" is now drawn at a certain point, according to the number of grammar school places available in the area. Finally the parent receives a printed letter informing him that his child has, or has not gained a grammar school place, as the case may be.

Such, in brief, is the procedure of selection. Of course, it varies in detail from city to city, and county to county, since each education authority has the power to choose its own method. In some cases, the child's school record, or the teacher's estimate of his "ability", is taken partially into account; in others, much careful attention is devoted to the so-called border-line cases, those who just pass or who just fail. But refinements in selection are rarely concerned with more than the minority on the border-line.

The actual point at which the dividing line is drawn varies considerably from area to area, and even within an area. In the West Riding in 1952, for instance, there were in one district grammar school places for 40 per cent. of the children; in another for only 15 per cent. A child in the first district could get to a grammar school with a mark of 59 per cent., while in the second the lowest score which secured a place was 70 per cent. in the same examination. About 1,700 children in this county who had marks over 59 per cent. failed to win a place in a grammar school.¹

In spite of this wide inequality of provision, the dividing line between "pass" and "fail" is incredibly precise: "Under the present system", writes the Chief Education Officer for the West Riding, "admission may be determined by a fraction of 1 per cent."² Suppose there are 500 grammar school places to be competed for by 2,500 children. The 500th child gets an average mark on, say, five papers, of 60.3 per cent. The

¹ A. B. Clegg, 7, 8.

² A. B. Clegg, 9.

501st gets 60.2 per cent. The cut-off point will then be 60.25 per cent. The former goes to a grammar school, the latter to a modern school. And, of course, just above and just below them will be grouped many other children who share their fate.¹

In this way, the examination acts as a great sorting machine, separating the children into two or sometimes three groups. The children have arrived at the point of "all change". Friends in the same form, brothers and sisters from the same family, may be sent off to different types of schools, some to wear the caps and blazers of the grammar school, others to the modern school. From now on each of these groups will receive a different type of education, and their opportunity to make the most of their lives will vary accordingly.

The Secondary School

It is after eleven, therefore, that the conveyor belts separate, and now the gulf is so wide that it is extraordinarily difficult to jump from one to the other. In some areas, it is true, there is an opportunity to transfer from one type of secondary school to another at the age of twelve or thirteen. But, like the border-line selection, this concession affects only a handful of children. The vast majority, well over 95 per cent., stay in the type of school for which they have been selected.

At the grammar school the child will get an academic education, for the grammar school is geared to the university and the professions; like the junior school, it prides itself chiefly on that small proportion of its pupils (sometimes about 10 per cent. though often less), who are selected for higher education, and, like the junior school, it tends to subordinate all education to this end.

But the way to the university is narrow, and the majority of grammar school children have no hope of reaching this goal. Many become bored and unco-operative at the age of thirteen

¹ Mr. Ben S. Morris, Secretary of the National Foundation for Educational Research, drawing attention to this question, cited the case of 140 "border-line" children competing for eighty places. The total marks obtainable in the examination was 500. All 140 children obtained over 400. They were separated by only twenty-two points (*Manchester Guardian*, October 16th, 1952).

or fourteen, and cease to derive much advantage from their education. Although full of life and potentiality, they fill the grammar school "C" and "D" streams (for these schools also are streamed), and many fall out of the course early. These are the "early leavers", or "misfits", about whom educationists hold conferences. They and their parents are condemned on all hands. But the parents, though anxious for their children to have a good schooling, did not themselves choose the grammar school curriculum. In many districts there is in any case no alternative, for secondary technical schools are still very few and far between. It is not, after all, the parents who are responsible for the inability of these schools to provide the majority of their pupils after fourteen or fifteen with a suitable curriculum and methods of teaching. The main influences determining the grammar school curriculum are the university entrance requirements, which inevitably dominate these schools, just as the selection examination dominates the junior school; and grammar school teachers, like those in the junior schools, are naturally anxious to assist as many children as possible towards a higher education. If the grammar school ceased to place its main emphasis on winning university places, if it changed its structure, organisation and curriculum to meet the needs of the high proportion of its children who at present have no chance of achieving higher education, it would immediately lose caste. Rather than risk this, it is easier to rationalise the children's failure as being the result of their own lack of ability, and to claim that many of the children who have found their way into these schools should not be there at all.

While the secondary schools are so organised that the grammar school almost monopolises the road to higher education, neither this nor any other type of secondary school can provide a general, all-round education. The very existence of the grammar school inevitably delimits the scope of the secondary modern school, which is cut off from the universities, the professions, and higher education generally. In those districts where there are secondary technical schools, the modern schools are also not required to prepare children for

another wide range of activities. The position of these schools in the structure of the educational system ensures that they can have no clear aim beyond providing a four-year course of teaching for those on the way to work at the age of fifteen. Since, in many occupations, the workers are not supposed to contribute any intellectual power or scientific knowledge to the processes of production, this aim does not call for any particular kind of education. The result is that the secondary modern schools are supposed to concentrate on "projects" and "practical activities" of all kinds, and that a scientific and systematic education is considered out of the question. Fortunately this advice is not always taken, but the success achieved in modern schools is achieved in spite of the conditions under which they have to operate, and is a testimony rather to the quality of the teachers and the children, than to the conditions in which they have to work.

Selection and the Education Act, 1944

At this point, parents may well ask: But why is it that this system still goes on? Didn't the Education Act open up secondary schools to all, and provide greater equality of opportunity? Why is it that selection at ten is more competitive now than before this reform?

In 1944, largely as a result of years of struggle by working-class organisations, progressive educationists and teachers, "secondary education for all" was by law established. But, in spite of certain important changes, such as the raising of the school leaving age from fourteen to fifteen, and the abolition of fees in maintained grammar schools, the new Education Act left things fundamentally as they were.

The old senior elementary schools were rechristened "secondary modern schools", so giving the appearance of equality with the "secondary grammar schools". But though some fine new modern schools have been built, in many districts secondary modern schools are such only in name. In reality they are the old senior departments of all-age schools, sharing a usually old and overcrowded building with the juniors. In a few places, "secondary technical schools" have

taken the place of the old "junior technical" or "intermediate" schools. But most parents are well aware that their child is likely to gain a more tangible advantage from his secondary education if he goes to a grammar school.

The Education Act did not lay down this particular form of organisation for secondary education. It merely required that, after the junior school, all children should be provided with an education according to "age, ability, and aptitude".

Nevertheless, two main types of school still exist, just as they did before the war. One stems from the elementary tradition of the eighteenth-century charity-schools and the nineteenth-century church and board schools; the other from the traditional grammar schools augmented by county secondary schools after 1902. And because the latter are still the only schools leading to a definite qualification, the General Certificate of Education, and still have the monopoly of the road to higher education, the gulf between the two types of schools still exists in spite of "secondary education for all"; indeed it has even widened, notwithstanding the efforts made by teachers to build up and broaden the education given in the secondary modern schools.

Competition for the grammar schools is now much sharper precisely because parents took the promise of the Education Act at its face value. And giving the old elementary school a new name is no more likely to take in parents than the labelling of streams with Greek letters deceives children.

The last ten or fifteen years have seen a tremendous increase in the desire of ordinary people that their children should have the opportunity for a real secondary education. During the war, the promise of a new deal in education was one of the things which made people feel that the sacrifices of war were worth while for their children's sake. It gave a deep social and human meaning to the struggle against fascism. The Education Act was, in fact, the only great Act affecting the social welfare of the people passed by the Coalition Government during the war. It evoked tremendous enthusiasm. It implied the promise of a new world.

This promise has not been fulfilled. In place of "secondary education for all", we have selection for a graded system of schools. Because of the new hopes aroused by the 1944 Act, methods of selection are more necessary and more important than ever before in the history of this country. And, in an attempt to allay doubts, to be "fair", the selection system has been made far more mechanical than it ever used to be, in spite of all the efforts made by examiners in certain areas to introduce some small degree of flexibility. For this reason selection for secondary education has to-day become far more competitive than it ever was in the past, and is now a public issue of the first importance.

Is there an Alternative?

Socialists, communists, and many educationists and teachers have for years fought to abolish this selective system in the schools; in particular, to do away once and for all with the need for this fatally important examination at the early age of ten, with its distorting effect on the child's education.¹

There is a perfectly practical way of doing this. In fact one county, Anglesey, has already done it. The method is to provide a unified system of secondary education. This can be done by developing what is called the "comprehensive" secondary school. This type of school, as its name implies, is one which takes *all* the children, aged eleven and over, living in a particular area, in just the same way as the junior school now takes all the children. It is, therefore, a common school, which essentially treats all children alike as *children*, and abolishes the need for making fundamental distinctions between them at the age of eleven.

There is a long history of struggle for the common school in the working class movement, dating from the time when it first developed as an independent political force. It was in 1837 that the London Working Men's Association, precursors

¹ The White Paper "Educational Reconstruction," issued by the Board of Education in 1943, said of selection: "There is nothing to be said in favour of a system which subjects children at the age of eleven to the strain of a competitive examination on which, not only their future schooling, but their future career may depend."

of the Chartists, first called, in the name of the working class, for a unified school system and the common school.

Before and after 1944, all the leading working-class organisations, including the Labour Party, demanded the common secondary school. But, except in a few areas, these have not yet been set up, in spite of the fact that a Labour Government was in power from 1945 to 1951.

The meaning, organisation and structure of the comprehensive school will be discussed again in more detail in the last chapter of this book. Reference is only made to it here to show that there is a perfectly practical alternative to the present divided system of secondary education, and that this alternative has strong popular and professional support behind it.

But in spite of this, we still have different types of secondary school, and for this reason we have selection and a "streamed" system of education, almost from the moment the children enter the State schools.

The Justification of Selection: Intelligence Testing

Fundamentally, the present selective and graded system of schools serves the needs of a class-divided society which is not able to utilise the abilities of all its citizens, and so dare not develop them to the full. It is the product of a social structure in which the leading positions in commerce, in industry, in the civil service, the army, the judiciary, and the professions generally are, on the whole, the monopoly of a small group.¹

The secondary school system corresponds to this pyramidal structure and includes, of course, schools which have not yet been mentioned. At the top are the "public" schools, charging fees up to £350 a year, and below them a hierarchy, ranging from the direct grant grammar schools—such as Manchester Grammar School—through the ordinary grammar schools, the secondary technical schools, to the so-called selective central or intermediate schools which still continue in some areas; the modern school and the top forms of the

¹ See M. Morris, *Your Children's Future* (1953).

old unreorganised all-age schools form the broad base, and educate the majority of working-class children.

The grammar schools are small and select because, owing to the static nature of our society, only a few people need to be recruited into the more influential positions. The underlying reason for the existence of the stratified education system is, therefore, to be found, not in the schools, nor in the children, but in the economic and class structure of society.

Naturally, every effort has to be made to make the present selective system appear both reasonable and fair. Official statements, of course, rarely mention the economic and social pressures on education. On the contrary, they attempt to justify the structure of secondary education on the grounds that it actually corresponds to the most fundamental needs of the children themselves.

It may perhaps seem a little ironic that a system which evinces such a lack of concern for the human needs of children, which decides their future by totting up marks gained at one examination, and which subjects many of them to an emotional and nervous strain of considerable intensity, should be justified specifically on humanist grounds. Nevertheless, this is the case.

The argument runs as follows: only a small proportion of children have the necessary intelligence to profit from a systematic secondary education which covers the main areas of knowledge, and which opens the way to further education. The majority of children simply have not got the ability to follow such a course. For them, therefore, a benevolent State provides a different and far more suitable kind of education in the secondary modern schools. The only motive for providing two or more different kinds of schools is that there are, in practice, two or more different kinds of children, the existing types of schools being specifically designed to meet their needs.¹

¹ Or, as the Ministry of Education has put it with sublime simplicity: "Everyone knows that no two children are alike. Schools must be different too, or the Education Act of 1944 will not achieve success" (*The New Secondary Education*, Ministry of Education Pamphlet No. 9, 1947).

This arrangement, it is claimed, is justified by science as well as humanity, for there is to-day a reliable scientific instrument which helps administrators to decide whether any particular child is fit for a grammar or a modern school. This instrument is the Intelligence Test. Administer this test to any group of children at the age of ten, we are told, and the results will show clearly those who will be relatively intelligent in later life, and those who will be relatively unintelligent. It is, therefore, perfectly justifiable to separate the sheep from the goats at this early age.

The "intelligence" test is, of course, supposed to measure inborn intellectual powers, and only a certain proportion of children—about 15 per cent.—are supposed to have the amount of intellect necessary to be able to profit from a grammar school course. In practice, as we have already seen, the proportion of children who actually qualify for grammar schools varies considerably from county to county, since some areas have grammar school places for only about 10 or 12 per cent., others for 30 per cent. or even more. But contradictions of this kind are usually passed over in silence.¹

During the last ten or fifteen years, the intelligence test has become one of the main ingredients of the selection examinations held by local education authorities throughout the country. Although the precise nature of the examination varies from place to place, according to the predilections of the authority concerned, this test is occasionally given double or even treble the weight accorded to other papers.² It must also be noted that the English and arithmetic papers most generally used are almost replicas of the intelligence test. The tests by which children are examined and streamed in the junior schools are also "objective" tests of the same kind. It is, therefore, no exaggeration to say that

¹ "Most authorities stated, that the minimum standard of ability and attainment required for admission to grammar schools, was an arbitrary standard determined by the accommodation available". (*Transfer from Primary to Secondary Schools*, N.U.T., 1949, 81-2). Accommodation available varies from about 8 per cent. (Gateshead) to over 60 per cent. (Merioneth) of the age group concerned.

² *Ibid.*, 93

success or failure in the intelligence test means success or failure in the selection examination for the overwhelming majority of children.

' Clearly the "intelligence" test merits the careful attention of parents, since it virtually constitutes the system of selection.

But it also deserves attention for a far more fundamental reason. In the last resort, it is the very keystone of the present educational system, for the theory that children can be divided into different groups, that they have fundamentally differing mental capacities which determine their whole future development, is derived from the theory and practice of intelligence testing.

The classic case for a selective system of schools and for the selection of an élite who have inherited "high ability," occurs in the Report of the Consultative Committee on Secondary Education (*Spens Report*, 1938); this sketched out, in general terms, the course of development for secondary education which has since been followed. It relied heavily on a certain conception of "intelligence":

"Intellectual development during childhood appears to progress as if it were governed by a single central factor, usually known as 'general intelligence', which may broadly be described as innate all-round intellectual ability. It appears to enter into everything which the child attempts to think, to say, or do, and seems on the whole to be the most important factor in determining his work in the classroom. Our psychological witnesses assured us that it can be measured approximately by means of intelligence tests".

The Committee add: "We are informed that, with few exceptions, it is possible at a very early age to predict with some degree of accuracy the ultimate level of a child's intellectual powers. . . ." From this evidence they conclude:

"Different children from the age of eleven, if justice is to be done to their varying capacities, require types of education varying in certain important respects."¹

¹ *Report of Consultative Committee on Secondary Education. H.M.S.O., 123-5.* The italics occur in the original text.

The Spens Committee accordingly proposed that there should be three distinct types of secondary school: grammar, technical and modern, the three types which have now come into being.

If this theory is correct, then it is clear that the case for a common secondary education is seriously weakened; it would be ridiculous to suggest that a similar education should be given to children whose intellectual capacity has been determined at, or even before birth, in such a way as to set clear and definable limits to their educational attainment. In this case, it would be more efficient, and possibly even more humane, to provide several different kinds of education, adapted to different levels of inborn intelligence.

If, on the other hand, this theory is false, then the main theoretical justification for the existing divisions within the field of secondary education falls to the ground. The common secondary school appears as the evident alternative.

Intelligence tests are, therefore, of crucial importance. Not only do they provide the practical means of selection, and so smooth the functioning of the present system, but also the theories which have evolved as a result of testing justify a divided educational structure, and indeed lead logically to more exact and precise streaming than that already described.

It is impossible to advocate the unified junior school and a common secondary education with any real hope of success until we are clear about this question of inherited "intelligence".

CHAPTER II

WHAT IS AN INTELLIGENCE TEST?

BEFORE we go on to discuss the theory and practice of intelligence testing in detail, it will be as well briefly to indicate the main features of the tests themselves.

An "intelligence test" is supposed to measure a child's inborn "intelligence", or "mental ability". His capacity to profit from education supposedly depends on the amount of "intelligence" he possesses.

Tests are of two main types: individual and group tests. Individual tests are administered to one child at a time. The best known is the original Binet-Simon test, first drawn up in France in 1905 for the purpose of diagnosing mentally defective children. This test has since been revised to adapt it to conditions in this country and America, and is still the test most widely used in psychological clinics. It is not, however, used for selection for secondary education, since to administer it to one child takes a trained psychologist about forty minutes; to test a whole age group of children in this way would clearly be impracticable.

There are other forms of individual tests, known as performance or manual tests, which are used for particular purposes. But, like the Binet-Simon test, they take some time to administer, and so are not used for selection. For this reason, individual tests are not discussed in detail in this book.

The group test, on the other hand, can be administered to a large number of children simultaneously. It also has other practical advantages. For example, it does not need the services of a trained psychologist; any teacher, after a little instruction and advice, is competent to take charge of the testing process.

Group tests were, in fact, specifically designed for testing large numbers of people in the shortest possible time. They were first developed and applied in the U.S.A. in 1917 and 1918 for the purpose of sorting out recruits to the U.S. Army. The experience gained was later turned to producing tests designed to sort out large numbers of children in the schools.

Although group tests vary slightly according to the theories of the constructor, they have essential features in common. Each child is provided with a printed test paper, usually containing about 100 individual questions. In answering these, the child normally has to choose the correct answer from among several alternatives which are presented to him. Typical instructions are as follows: "In answering the questions there will be *nothing to write*. You will have to pick out the correct answer and *underline* it only." Or again: "You will not have to write anything at all, but only underline certain words and put crosses in certain squares."

These instructions are important, since they are an essential aspect of what is called the "standardised test situation". The aim is to ensure that "all children who are subjected to the test shall do it under as nearly as possible identical circumstances".¹ The underlying assumption here is that, if exactly the same instructions are given to all children, they will all react in an exactly similar manner, and their performance may be safely and accurately compared.

With every test, therefore, a detailed set of instructions is supplied, which the teacher should follow exactly. These tell him how to distribute the tests and precisely what he should say to the children. A forced brightness is often demanded. In one test, for instance, the supervisor says: "You will like this. Look at what the book says on the front cover. Write your names where it tells you to do so. Have you all done this? Pencils up when you have finished. Now read what it says. You will like this book", and so on. No child may start until the word is given.

Nearly all group tests have a time limit. They are, therefore, partially speed tests, purposely designed so that very few children finish completely in the time given. The instructions impress this on the children: "Work through (the questions) *as carefully and quickly as you can*. . . . Each test has to be finished in a certain time, so do not waste time on examples that you cannot do." The object here is to ensure that the tests differentiate effectively between the children. Given the kind of

¹ P. E. Vernon, *The Measurement of Abilities* (1940), 171.

question asked, the most practicable way of ensuring this is to ask so many questions that even the fastest worker cannot complete the papers with any regard for accuracy.

Many tests are divided into a number of sub-tests, each occupying a page in the booklet. When this is done, a time limit is set for each page of about twenty questions. The standardised instructions may read as follows: "See that each pupil is working on the right page. After the exact number of minutes specified below (from three to ten minutes), say to the pupils: 'Pencils up. That was well done. Now look at the next page. Are you ready? Do what it tells you to do there. Ready! Begin!'"

This formula has to be repeated five times in a test lasting thirty minutes. Timing is done with a stop-watch.

Most intelligence tests include a "battery" of sub-tests, each sub-test consisting of questions similar in type, but varying from easy to difficult. The increasing difficulty of the questions is a principle as essential to the tests as the time limit, since it also ensures that the final marks will differ considerably. There are, however, "omnibus" tests, in which different types of question are mixed up together, though the general order of difficulty is preserved. These have no "batteries" of sub-tests, and simply an over-all time limit.

The questions asked may vary considerably in detail, but are all similar in type. Most of the common forms used are listed below; most of the examples given are taken from actual tests for children of about eleven:

(1). *Opposites (a) (The testee underlines the correct word from those in brackets; sometimes he is asked to pick the most nearly opposite).*

1. Hot is the opposite of (wet, comfortable, cool, wintry, cold).
2. Gift is the opposite of (theft, expense, parcel, unkindness, enemy).
3. Famous is the opposite of (poor, failure, ancient, unhappy, unknown, shy).
4. Inquisitive is the opposite of (uninterested, forgetful, eager, knowledge, anxious, queer).

(b) (*The testee underlines two words which mean the same, or nearly the same, and a third word which means the opposite of the other two*).

1. Below, begin, grow, common, collect, end.
2. Attempt, audacity, timidity, lucidity, brazen, boldness.

(2) *Analogies. (The testee underlines the correct word from those in brackets).*

1. Wear is to clothes as eat is to (hat, table, food, plate, fork).
2. Flavour is to mouth as colour is to (ear, brush, paint, nose, eye).
3. Fire is to heat as lamp is to (flame, candle, see, light, soot, dark).
4. A is to Z as birth is to (marriage, cradle, mother, death, birthday, B).

(3). *Synonyms. (The testee underlines the correct word from those in brackets).*

1. Big means the same as (fat, tall, brave, large, heavy).
2. Kill means the same as (murder, shoot, destroy, slay, bury).

(4) *Classification (a) (Five words are given: the testee picks out the one word most unlike the others in meaning).*

1. Red, green, blue, wet, yellow.
2. And, but, if, now, although.

(b) (*The testee underlines the word in brackets which is like the three in capital letters, but different from all the others*).

1. BREAD, FRUIT, MEAT (baker, eat, butcher, pudding, recipe, delicious).
2. ENLARGE, STRETCH, EXTEND (compress, elastic, intend, strengthen, increase, twist).

(5) *Mixed Sentences (The testee works out the phrase, and decides whether it is true or false. Alternatively, he underlines "unknown")*

1. A roses odour pleasant have. True. False. Unknown.

(6) *Reasoning (In the first example the testee underlines the best answer).*

1. Peter is taller than James. Edward is not as tall as Peter. Who is the tallest?

(1) Peter.

(2) Edward.

(3) James.

(4) Cannot say.

2. Five girls whom we shall call F, G, H, I, J, sit side by side on a seat.

F has H next to her on her left, and J next to her on her right.

G sits with I and J on either side of her.

Who sits one from the right?

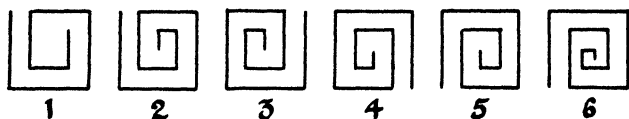
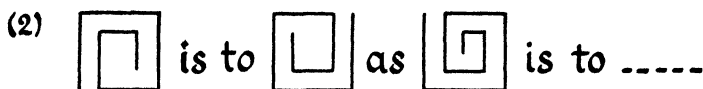
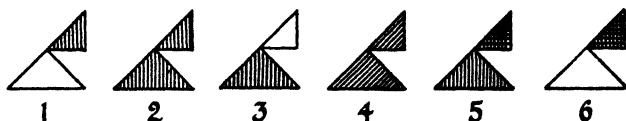
3. If an inch is longer than a foot, write the first letter of the name of the longer unit, but if not, write the last letter of the name of the day of the week that to-day is.

(7) *Alphabet Questions (The alphabet is printed, and the questions based on it).*

1. What letter comes midway between G and O?
2. Suppose the first and second letters of the alphabet were interchanged, and also the third and fourth, and fifth and sixth, and so on. Which letter would then come seventeenth?
3. One day of the week begins with the third letter after T in the alphabet. Write the second letter of this day.

Some tests consist only of verbal questions of this character. Others include problems involving numbers. The testee may be asked, for instance, to complete a number series (e.g. 1, 3, 6, 10, . . . what comes next?). Other number questions are put in the form of letter codes and puzzles. Finally, some sub-tests may be non-verbal, that is, the questions may be concerned with the relations between shapes instead of the relations between the meanings of words or sentences. Some psychologists hold that to ask only verbal questions is to handicap children whose vocabulary is limited, and they

have therefore sought to construct tests which will reveal the child's supposed innate intelligence without requiring a knowledge of words. Non-verbal questions of this kind are sometimes included in intelligence tests used for selection, though the weight of opinion seems to favour the verbal test for this purpose, in spite of the fact that verbal knowledge clearly depends largely on schooling and opportunity.¹ Below are some examples. The testee is asked: "Which shape will you choose to finish the sentence?"



When the children have completed the test, it is marked, again in a standardised way. Tests are so constructed that all the answers can only be either right or wrong. The process of marking is, therefore, quite "objective": each marker is

¹ Professor Vernon writes: "But since one of the most important, if not the most important use of intelligence tests is that of predicting scholastic aptitude, and school work is itself predominantly verbal, verbal tests are certainly the most useful" (Vernon, 182-3). The Moray House Intelligence Tests, very widely used by local authorities for selection, are almost entirely verbal tests. As for the non-verbal tests, psychologists now agree that the child's general verbal and educational background considerably affects his score, for a summary of some evidence on this point, see: J. D. Nisbet, *Family Environment*, 1953.

provided with a key, and simply tots up the correct answers. In the U.S.A. this process is often further simplified by the use of a special kind of carbon paper which records *only* the correct answers, and so allows for final marking by an electrical machine.¹

When tests are used for a selection examination, the score got on the intelligence test is given whatever weight the particular authority favours, and then added to the marks gained in the other tests (usually English and Arithmetic). An age allowance is then made, based on a complex statistical procedure. The object here is to prevent younger children being penalised, and older children gaining an advantage from their age differences. In this way each child's individual mark is computed, and the final order of merit of the children, from which the selection is to be made, is compiled.

This is all that is needed if the test is used for selection. If it is to be used to establish the child's intelligence quotient (I.Q.), which theoretically provides a measure of his intelligence, the test has to be "standardised". This is a complex process which is discussed in the next chapter; at this stage it is enough to say that the average score for each age group of children is calculated. For instance, the scores of children aged eleven years six months may average out at 120. Then any child, whatever his chronological age, who scores 120, is said to have a "mental age" of eleven years six months. From this, the I.Q., which actually expresses the ratio between mental and chronological age, is worked out by the following formula:

$$\text{Intelligence quotient} = \frac{\text{Mental age} \times 100}{\text{Chronological age}}$$

If, for instance, one child aged ten years six months, and another aged fourteen years, both score 120 on the standardised test, then each has a mental age of eleven and a half, and their intelligence quotient works out as follows:

¹ In this way no subjective factors enter into the marking of tests, that is to say, the marker never has to use his own judgment as to whether one answer is better than another. This is held to be one of the strong points of tests.

$$(a) \text{ I.Q.} = \frac{11\frac{1}{2} \times 100}{10\frac{1}{2}} = 109.5$$

$$(b) \text{ I.Q.} = \frac{11\frac{1}{2} \times 100}{14} = 82.1$$

On the surface, intelligence tests appear very simple. Actually they involve a number of difficult logical, statistical and philosophical problems, both in their construction and in the interpretation of their results. Some of these will be discussed in the next two chapters.

CHAPTER III

THE PRACTICE OF INTELLIGENCE TESTING

Why These Particular Questions?

THE crucial problem posed by the preceding discussion of intelligence tests is this: Why is it held that questions of the particular type outlined—synonyms, antonyms, number series, etc.—test intelligence?

The short answer to this question—and it needs to be made quite clear at the start of this discussion—is that no one thinks that these questions test intelligence in the sense in which the term is normally used in daily life.

This may seem surprising, in view of the supposition that this is precisely the intention of tests. But the public may be forgiven for the misunderstanding. The real state of affairs is not often explained, mainly because educational psychologists are not clear about this issue themselves.

Probably most people use the word “intelligence” (or the adjective and adverb “intelligent”, “intelligently”) to describe how a particular individual has behaved in a particular situation. We may say, for instance, that a rock-climber made an intelligent use of the holds in mastering a difficult climb, or, to put it in another way, that he displayed intelligence in the choice of holds; we may say that Dennis Compton played a googly in an intelligent way, or that a bricklayer overcame a difficult problem in an intelligent manner. We may say also that a boy who is doing well at school is intelligent.

Without probing further into the precise meaning which may be assigned to this word, we can at least recognise that these judgments all have one feature in common, they describe the way an individual behaves in situations that occur in the course of living. In practice, it is by the careful observation of human *behaviour* of this kind that judgments are made about individuals.

The normal use of the word "intelligence" implies, therefore, a functional intelligence, *one that is revealed in the course of action*. It is, of course, common knowledge, that a man may be very intelligent in one particular field, and yet quite unintelligent in another. For instance, if Dennis Compton and our rock-climber were transposed, it would probably be impossible to make the same judgment of their actions as was made in the case of the activities with which they are familiar.

Similarly, a university professor may display unbounded intelligence in his analysis of the structure of the atomic nucleus, in literary criticism, or in some other field of study, and yet make ridiculous statements about, for instance, sex, religion, the population problem or communism. Further, as far as his family or human relations generally are concerned, he may behave in a distinctly stupid way.

It is not with this kind of intelligence that tests and test questions are concerned. It is easy to see that the practice of mental testing, as already described, inevitably excludes the exercise of what might be called functional intelligence. This remains true in spite of the psychologists' claim that they do attempt to measure, to some extent, some "aspect" or "component" of what might be called "daily life" intelligence.¹

In the first place, the group intelligence test isolates the individual from all social relations and from any "real life" situation. Under the control of an automaton teacher, divested of his usual characteristics, the child is presented with a set of symbols to manipulate, items of a "restricted and artificial type".² The test situation clearly differs, in a most important respect, from most situations with which the individual is faced in the process of living.

Secondly, the questions asked exclude, or attempt to exclude any emotional response; this is done in an effort to isolate the

¹ Thus Vernon talks of "the intelligence which we recognise in daily life. . . which we wish to measure" (Vernon, p. 194). Burt claims that the meaning of "intelligence", "which corresponds to the usage of most psychologists" is the "innate component" of "intelligence" as manifested in daily life", and "intelligence" as measured by some one test (without adjustment for irrelevant factors" (Burt, *Intelligence and Fertility*, 1946, 41).

² Vernon, 194.

pure "intelligence" which the psychologist seeks to measure. In a life situation, the individual's feelings, his emotional responses, play an essential part in his total response. They are equally involved even in the most standardised test situation. But every effort is made to eliminate individual human responses. Questions which might arouse an emotional feeling are regarded as "invalid" (giving a "wrong" estimation of the individual's intelligence), precisely *because* the individual has an emotional response to them. For this reason the intelligence test is deliberately constructed so that questions are remote from "real life" situations.

What, then, is the intelligence that is measured by tests?

Most psychologists argue that it is a quality of mind, a kind of essence, *inherited by the child at birth*, in much the same way as he inherits blue eyes or black hair. Sir Cyril Burt, for instance, suggests that all children are born with a varying amount of "innate general cognitive ability", and this is what the tests measure with a greater or lesser degree of accuracy.¹ Some psychologists go further and give a more precise definition. Thus, Professor Knight has defined the intelligence measured by tests as "the power to discover relevant relations and the power to educe relevant correlates".²

This last definition is based on the theories of Charles Spearman, a psychologist who attempted to bring order into the practice of mental testing in the 1920's. Spearman recognised that tests could hardly be called scientific when no two psychologists could agree either on *what* they were measuring or *how* to measure it. He collected some twenty definitions of intelligence, all mutually exclusive, and showed that no concrete evidence had been adduced to support the claim that the tests really did measure any of the hypothetical qualities defined.³

¹ Cognition: "Action or faculty of knowing, perceiving, conceiving, as opposed to emotion or volition" (*Concise Oxford Dictionary*).

² R. Knight, *Intelligence and Intelligence Tests* (4th Edition, 1948), 29.

³ For instance, intelligence is "the power of good responses from the point of view of truth"; "the ability to act effectively under given conditions"; "the capacity to acquire capacity" for "success, either past or present"; the power of "abstract thinking"; "the capacity to profit from experience" (C. Spearman, *The Nature of Intelligence and the Principles of Cognition*, 1927, 12-15).

He then himself entered the field, but with certain definite ideas about the nature of "mind" or "thought", and with a strong belief in the efficacy of certain forms of statistical calculation. In brief, he made up a number of tests, administered them, and, after making certain calculations with the results, claimed that these supported the suggestion that all human minds have a central "power" (he called this "general mental energy" or "g") which can be accurately measured by certain kinds of tests. He avoided the use of the word "intelligence" owing to the varying meanings that had been assigned it.

These conclusions were immediately subjected to criticism by other psychologists. Some did not believe that the kinds of tests used by Spearman were acceptable; others took exception to his statistical calculations, and showed that by applying slightly different rules, quite different results could be obtained. Since this time, many more tests have been administered and many more calculations made, but it is true to say that the nature of "intelligence" is as obscure as ever it was; whatever it is that tests measure, this thing cannot be defined in a way that both commands general agreement and is in any degree precise.

Some psychologists skirt the problem posed by the lack of definition in this way: We agree that intelligence cannot be defined, but we have good reason to believe that it exists. It is for all practical purposes, sufficient to say that *intelligence is that which is measured by intelligence tests*. This latest definition deliberately deprives the word of any meaning external to the test itself. It enables us, however, to re-phrase the question posed at the start of this chapter, which should now read: "Why is it held that questions of this particular type test the intelligence that is measured by intelligence tests?" The question has, of course, become quite meaningless. This helps us to come to an initial conclusion: whatever psychologists may argue in theory, in *practice* intelligence is definable only in terms of the actual questions in tests. In other words, tests are not objective. The subjective element, the personal judgment of the psychologist, is decisive, because he chooses the actual

questions which he *thinks* test what he *thinks* is intelligence. No amount of objective marking, or standardisation of the test situation, can redress the balance.

Professor Vernon puts it in this way: "All the test items or sub-tests are selected in the first place on the basis of subjective opinion; they must appear to the tester to involve the exercise of intellect".¹ Now a test constructor may hold one of several contemporary theories as to what it is that he is testing. He may hold that "relational thinking" is important, and so set out to test this, or he may hold that other thought processes are relevant, and attempt to test these as well. In either case, he can only reach this essence that he wishes to measure through the medium of words, figures or shapes; he must decide what type of question to ask, and in what form these questions are to be put. It is clear, therefore, that the items of any intelligence test, and the intelligence test as a whole, embody not some objective criterion of intelligence but only the constructor's ideas about it.

There are a number of checks which a constructor can make in order to decide whether his questions are good ones for his purpose; these will be referred to later, but here the important point to emphasise is the arbitrary, subjective nature of the actual questions themselves.

An analysis of the kind of questions, which test constructors have chosen as "involving the exercise of intellect" is instructive, in that it shows that tests must involve a great deal of acquired knowledge. A verbal intelligence test for children of about eleven, chosen at random, shows that in order to have the necessary data to answer some of the questions at all, the testee must know the following things (only a few examples are given): the meaning of such words as "spurious", "antique", "external", "irregular", "inexpensive", "affectionate", "moist": that a sovereign is made of gold, while a florin is made of silver; that pearls, emeralds, sapphires, diamonds and rubies are precious stones, while gold is not; the relative functions of telephone and telegraph; the use of thermometers; the reasons for saving money; the purpose of charitable

¹ Vernon, 176.

societies; what a cubic block is; what a code is; what a clerk's job is; that ledger-clerks work in banks; what an individual's "mechanical bent" is; what a person's "inclinations" are; that a shorthand-typist is expected to be able to spell well; what "the adjustment of an individual to his vocation" means; and finally, that a parlourmaid is not expected to do the sewing in a house!

Such knowledge may seem obvious to the adult and even to the fortunate child of eleven, but it is by no means so obvious to the average child brought up in an overcrowded house in the centre of an industrial city. One might say that the information required for success depends directly on social status. Many working-class children will never have heard the subject matter of some of these questions discussed, and yet the questions cannot be answered unless the *meaning* of each of the words is fully grasped.

The test quoted was compiled in 1925. Of recent years, much effort has been devoted to eliminating questions which discriminate so evidently on class lines. But this has inevitably led to the formulation of ever more tortuous questions, without removing the fundamental objection. It is impossible to make questions progressively more difficult without bringing in unusual words or peculiar sentence construction, as some of the examples given in the last chapter clearly show. As a result, children who have not had the opportunity to read widely, or to acquire verbal facility, must always be at a grave disadvantage. Indeed, it is no exaggeration to say that the difference between social classes is most easily to be discerned in differences of expression, vocabulary, and sentence construction. The most common grammatical "errors", in the formal sense, are precisely those forms of speech which are generally current in local dialect. In short, it would be difficult to find a more effective method of differentiating children, according to social environment, than the standard verbal intelligence test.¹

¹ A recent test of this type, widely used for selection at ten, included among only eight contiguous questions, the following words, the precise meaning of each of which had to be fully grasped before the questions could be answered correctly: expose, confess, position, uncertain, insult, offence, frail, sturdy, fragment, inquisitive, anxious, eager.

The fact that these tests discriminate against the working class has been admitted by educational psychologists. In an entirely praiseworthy attempt to overcome this difficulty and to produce a really "fair" test, some have tried to evolve "culture-free" tests—that is, tests which involve acquirements more equally available to children from all social classes. Non-verbal tests, which consist only of shapes and figures, and possibly pictures, are of this character. But these are also open to objection, because mastery of shapes and figures varies with the character of the child's education and his home environment. It follows that a test of this kind is also bound, primarily, to test educational attainment.¹

It has already been noted that the tests used for selection are primarily verbal and number tests, and success in these evidently depends, to a large extent, on how effectively a child has been taught, either by his teachers, his parents, or others; in other words, on the general opportunities he has had for learning. These opportunities, of course, vary considerably with variation in economic status. One has only to compare the education of a child in a private preparatory school, with classes of ten to fifteen, with that of the average child in a city school, with classes of forty-five to fifty, to recognise how wide are the differences in educational opportunity between middle- and working-class children.

It is not, therefore, surprising that experimental work with tests has shown first, that a very close relation exists between tests results and educational attainment, and, second, that there is a similarly close relation between test results and social class. We have seen that test questions inevitably favour the middle-class child, and that it is the questions, and only the questions, which determine and define the kind of "intelligence" that is being measured. It may be concluded, on these grounds alone, that the "intelligence" measured by tests is anything but a pure intellectual power; it evidently comprehends what can only be described as a class element.

¹ Comparing non-verbal to verbal tests from the point of view of "fairness", Vernon concludes that the former ". . . of course, are open to analogous defects" (Vernon, 182).

The Distribution of Intelligence

Another set of arguments about the validity of intelligence tests may now be examined. When tests are given to large numbers of children, and all the scores are plotted out on a graph, a certain recognisable pattern emerges. This curve is supposed to indicate how intelligence (as defined by tests) is distributed among the population as a whole.

Here some interesting points arise. Though parents are accustomed to think about intelligence tests in terms of an individual child's results—George has an I.Q. of 100 and Betty an I.Q. of 120—and to assume that this represents some absolute measurement of the child's intellectual powers, it is really quite unjustifiable to give an *individual* label of this kind at all. A test result only tells us what the child's status is *in relation to* all the other children who have done the same test. The most that can be said is that George is *less* "intelligent" than Betty, and *more* "intelligent" than another child with a lower I.Q. This illustrates that tests are unsuitable instruments for diagnosing *individual* human qualities; their primary function is to classify, sort and arrange people, according to certain criteria.

Discussing the limitations of the statistical methods fundamental to the practice of intelligence testing, Professor Vernon points out that their "fundamentally abstract nature . . . needs to be stressed. They are adapted primarily for mass-investigations of measurements obtained from large numbers of persons, and such investigations are apt to lose touch with the concrete individual case."¹

From the very outset of mental testing, psychologists have been primarily concerned with the question of the *distribution* of intelligence among a whole population. When only very few tests had been constructed and administered, attempts were made to calculate, from such results as were available, the probable distribution of "intelligence" among thousands and millions of people. This was not the result of mere scientific curiosity; it was quite essential to the further development of tests that there should be such a general picture. Without it,

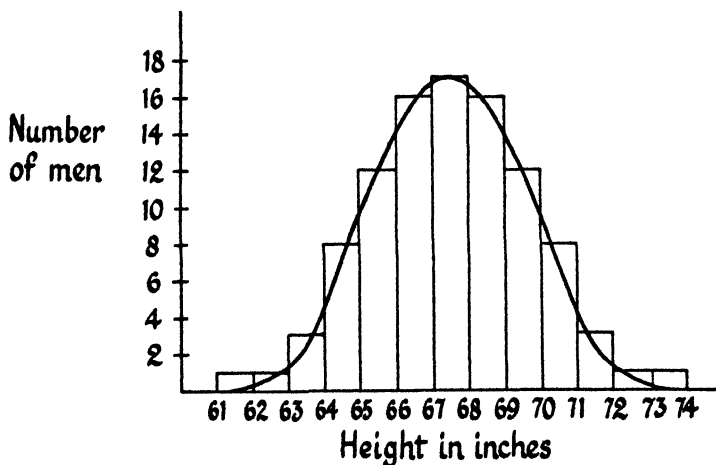
¹ Vernon, 3.

no classification of children or adults was possible, nor for that matter, could anyone claim that their test was a "valid" measure unless the results showed a distribution of "intelligence" approximating to that produced by other tests purporting to measure the same thing.

But this is also a matter of public interest, because, if it can be shown that, for instance, 20 per cent. of the population have a relatively high intelligence, and 80 per cent. a relatively low intelligence, then various conclusions follow in the sphere of practical public policy, especially as regards education and schooling.

The conclusion arrived at was that the distribution of "intelligence" follows a normal curve. What is meant by a normal curve? This is a technical term implying that the majority of measurements obtained in an investigation cluster about the average mark; only a few extreme measures are recorded, and the number of measurements at given intervals above the average is the same as the number below.

It is easier to understand if represented in a diagram. Let us take, for example, the probable heights of ninety-nine Englishmen chosen at random. If these were plotted on a graph, we would tend to obtain the following figure:



In the figure above, each rectangle represents the number of people whose height falls between certain limits. In this hypothetical group of ninety-nine people, one is between 61 and 62 inches tall, one between 62 and 63 inches, three between 63 and 64 inches, and so on up to the largest group of seventeen people whose height lies between 67 and 68 inches. Those taller than this are distributed in an exactly similar manner to those below this height. Once these figures have been plotted out, a curve can be constructed, as above; this is the normal curve.¹

Now it is clear that, since "intelligence" cannot even be defined, there can be no way of knowing how it is distributed, whether in this way or any other. But unless the general distribution of "intelligence" can be calculated in some way, adequate tests, purporting always to measure the same thing, cannot be constructed. Faced with this contradiction, mental testers have made what can only be an assumption: that "intelligence" is normally distributed. In the nature of the case, there can be no scientific proof that this is so.²

As a result, arguments about test construction and test results tend to revolve within an enclosed circle. "Well-constructed tests always tend to yield a normal frequency distribution; hence we are entitled to regard departures from normality as indicative of bad construction or bad scoring", writes one authority.³ A little later in the same book the same proposition is advanced in a somewhat different way. A test, it is said, should be "of such a length, and contain questions of sufficient ease and difficulty, to differentiate among both the

¹ The example is based on that given by P. B. Ballard, in *Mental Tests* (1937 Edition), 115-18.

² It has sometimes been argued that early experiments with tests proved that "intelligence" is normally distributed without the aid of any statistical procedures. But in these experiments the test used was the Binet test—one not now accepted by psychometrists as a scientific test of "intelligence"; further, though the particular version of the Binet test used was constructed without the statistical aids now generally employed, the acceptance or rejection of questions was based on a principle which made an approximately normal distribution a foregone conclusion. See L. M. Terman, *The Measurement of Intelligence* (1919).

³ Vernon, 27.

poorest and the best pupils, and to yield an approximately normal distribution".¹

In other words, the psychologist constructs his test in such a way that it will tend to give a normal distribution of scores, and no other. Any test which gives a different distribution is "badly constructed"; it is accordingly jettisoned as a "bad" test of "intelligence". The fact that accepted tests always give an approximately normal distribution of scores is then advanced as proof that "intelligence" exists and has been adequately measured by the tests concerned.

Even an approximation to the normal curve is considered adequate to sustain the approved position. For example, the large scale testing of Scottish children in 1939 brought results which did not exactly follow the normal curve. But these discrepancies have been described as relatively slight, so that "*for many practical purposes we may continue to regard the distribution of intelligence, when measured by an adequate test as normal*".² But for all practical purposes an adequate test is, by definition, a test which is so constructed that it will tend to give a roughly normal distribution of scores. To conclude from a large-scale application of such a test that *intelligence* is normally distributed, is merely to re-iterate the assumption with which the psychologist embarked on the investigation. The distribution proves no more than that the test was efficiently constructed within the arbitrary limits set. It certainly does not even begin to prove that "intelligence" is always to be found in certain fixed proportions in every population.

On the contrary, any mathematician could easily demonstrate that, by careful choice and arrangement of questions, it is difficult to avoid obtaining a normal distribution of scores. If, for instance, a test of ninety questions is constructed so that, on average, 10 per cent. of children get the first ten questions wrong and 90 per cent. get them right, 20 per cent. get the next ten questions wrong and 80 per cent. get them right, and so on up to the last ten questions which 90 per cent. of children omit or get wrong and 10 per cent. complete correctly, then the scores are bound to fall into a pattern

¹ Vernon, 39.

² *Ibid.*, 21. (My italics.—B.S.)

roughly corresponding to the normal curve. This is mathematically determined. And, of course, this is precisely how test constructors arrange the questions when they choose items of "varying difficulty" and put them in an "order of difficulty", controlled also by time. If the test contained eighty questions which 90 per cent. of children get right and only 10 per cent. get wrong, and ten questions which 10 per cent. get right and 90 per cent. get wrong, the scores would not, of course, be normally distributed. There is nothing to show that the latter would be a worse test of "intelligence" than the former; but the former test is, of course, preferred because the normal curve provides a basis for all kinds of theoretical arguments and is, besides, far the most convenient from a statistical point of view.

There is, however, no reason why test scores should not be distributed in a whole variety of other ways. It would be perfectly possible to construct intelligence tests which gave all manner of different distributions.

Why then, is it so easily assumed that "intelligence" *must* be normally distributed? The bias in favour of normal distribution is partly to be explained by the fact that certain physical characteristics, such as height, are normally distributed. A further argument is derived from certain human performances. Measurements of the number of times children can tap with one finger in a minute, or the number of words they can write in the same time, are often normally distributed. If all these various human attributes are distributed in this way, why not also "intelligence"?

This kind of argument by analogy has no scientific validity. It might just as well be argued that some physical characteristics—such as weight and hair colour—are not normally distributed. Performance tests are not so much tests of mind, as of muscular co-ordination and control. To argue about the fundamental nature of mind by analogy from such physical characteristics is an exceedingly dangerous proceeding, since the brain and the higher nervous system represent a qualitatively different organisation of matter, about whose structure and functioning extremely little is as yet known.

The assumption that "intelligence", itself an indefinable quality, is normally distributed is, then, nothing but a shot in the dark. Nevertheless, the broadest possible assertions are based on the curve of normal distribution. If it is assumed that this curve illustrates the distribution of a key human power, "intelligence" (and not merely the distribution of test scores as a result of applying "well-constructed" tests) then it can be asserted that there must always be a few people with high intelligence, suited to posts of responsibility and "leadership"; the vast majority are merely average, and are not likely to achieve much in their lives—they are doomed to be the followers of the few intelligent leaders. Many people genuinely believe that this is the case, that there is some natural law which operates to ensure that human beings have varying powers in just these proportions. No better justification could be found for the necessity of providing different "types" of schools for different "levels" of "intelligence".

Many people appear to think that intelligence is "obviously" distributed in this way. In any school, they say, you will find at the top of the "A" stream a few highly intelligent children; at the bottom of the "C" stream a few very unintelligent children, while the majority lie between these extremes. Objective (new-type) examinations, they say, give the same result.

But this argument shifts the discussion from intelligence to educational attainment. It is perfectly true that, in our society, at present, with the schools organised in the way that has been described in the first chapter, the children's educational attainment will tend to be distributed in this order. This arises from our whole selective system and the process of streaming, which ensures a wide spread between the attainment of the best and the worst, and which operates to widen this spread as the children grow older.

To argue from this situation that intelligence, if it exists, is also distributed in this manner, is quite unwarrantable. If our schools were organised, not on the present competitive, individualist basis, but instead in such a way as to provide the conditions for bringing all the children on at a relatively equal

rate, as is done, for instance, in the U.S.S.R., Poland and elsewhere, then an entirely different distribution of educational attainment would be achieved. In the U.S.S.R., for instance, the examinations each year are so designed that nearly all the children of a particular class are expected to pass them. They mark the achievement of a certain definite educational stage for all children, and the teacher and class as a whole specifically set out to see that all its members are capable of passing the examination. The very small proportion, probably about 7 per cent., who do not achieve the required standard, usually cover the course again. The result is a much more equal level of educational attainment than is achieved here.¹

This does not mean that all children are held down to a dead level; some, for example, may have ranged much wider than others in the usual studies. It does mean that, so far as important basic knowledge and skills are concerned, all children are helped to reach a definite standard.

In this country, however, the concept that nearly all the children should attain a given educational level is considered as being either undesirable or impossible of achievement. The schools are organised to provide for a differentiation between children, and the new types of "objective" examinations, often used in junior schools as well as in the selection test, *specifically set out to ensure that these differences are underlined, by deliberately excluding questions that all the children can answer.* "In new-type examinations", says Professor Vernon, speaking of one-word tests in English, arithmetic, intelligence, and so forth, "several sections of the work may be omitted altogether if they are likely to be known so well that more than 95 per cent. of the students would answer questions on them correctly. *It is a pure waste of time to include items which everyone can do.*"²

New-type examinations of this kind reflect the objectives of a

¹ Annual examinations in the Soviet seven-year school (seven to fourteen) start when the child is eleven. These are partly oral and partly written. Failure in more than two subjects involves repeating the year's work. (See G. C. T. Giles, "Why Soviet Teachers oppose Intelligence Tests", *Anglo-Soviet Journal*, XIV, 1, 13).

² Vernon, 260. (My italics.—B.S.)

highly selective educational system, and are specifically designed to facilitate its working. Their function is therefore the opposite of that of examinations in socialist countries, which mark the completion of a stage of work by all children. The first type of examination deliberately excludes questions which all the children can do, while in the second type all the children are expected to be able to do all the questions which are set on the year's work. These opposing concepts of the role of examinations reflect opposed views on the function of teaching and education.

The present distribution of educational attainment in the schools of this country is a product, not of the nature of the "child mind", but of the social and economic factors which determine both the structure and organisation of the educational system, and the wider opportunities of children to learn and develop. To derive from the situation, as it exists to-day in our country, evidence for the existence of a basic law—that "intelligence" is always normally distributed—is just as questionable as are all the other arguments in favour of the normal distribution of "intelligence".

The Construction of Intelligence Tests: (a) Arranging the Questions

The main way of ensuring that the scores of intelligence tests are normally distributed, is to include questions carefully graded in an "order of difficulty". But other techniques have also to be employed. It is important to examine them carefully, since if we understand how a test is constructed—with the aim of making it a kind of mental foot-rule—we will be in a better position to assess its value.

We may begin by describing a simple method, which, though no longer used in the pure form described, has provided the starting point for the more sophisticated procedures of to-day.

The psychologist starts with, say, 200 questions, varying from easy to difficult, all of which he thinks will test intelligence as he conceives it. He sets these questions to a group of children who have already been approximately graded by their teachers in what the latter think is the correct order of

intelligence; the teachers will have relied partly on their own judgment, partly on the results of examinations and other relevant information in making up their list. The psychologist's aim is to pick, from his 200 original questions, the 100 which discriminate best between the children according to the grading provided by the teacher, and which produce an approximately normal distribution. In other words, he intends to keep only those questions (usually about 100) which seem to give the "right" assessment of the children.

For instance, to take an extreme example, he may find, on analysing the children's answers to one particular question, that nearly all the children graded highly by the teacher have got it wrong, while nearly all those graded low for intelligence have got it right. This question he will inevitably throw out as a bad test of intelligence.

It is highly improbable that such a clear-cut situation would arise. More usually, correct answers will be given by some children graded as intelligent and some graded as unintelligent. The task is then to choose those questions which have the "right" *proportion* of correct answers from each section, so that, in the test as a whole, the children graded by the teachers as intelligent come out at the top, and those graded as unintelligent at the bottom.

The final test evolved will, therefore, consist of the hundred questions which discriminate best among the children according to the judgment of the teacher and the psychologist. It must also give approximately a normal distribution of the test scores. Questions which seem to upset this normal distribution are, of course, jettisoned.

Any test, therefore, consists of questions graded in difficulty, from those which all the children can get right, to those which very few get right. The cut-off at the top is also ensured by making the test into a speed test, i.e. allowing only so many minutes for each group of questions. Once more, this timing is so arranged that all children can answer some questions, but very few reach the end of the test; this gives scope to the child who works fast, enabling him to pile up additional marks near to the maximum level.

The Construction of Intelligence Tests: (b) Validating the Test

These procedures mark the initial stages of test construction. If the test is to make some claim to be scientific, various checks are required. The close relation between the test results and the teachers' estimates might, for instance, be due to fortuitous factors. In an attempt to ensure that this is not the case, the psychologist must go on to "validate" his test, i.e. to see whether it really is measuring whatever he set out to measure. To do this, he must check it against some other measure of intelligence, one, shall we say, which is generally accepted by other mental testers.

An analogous procedure would be the following: if I want a bit of string which measures exactly one yard, I could cut off a length which I *think* approximates to a yard, using some household article as a rough guide. This process could be said to be equivalent to the construction of a test as described above. But in order to ensure that my bit of string is a valid measure, I must test it against a ruler, and if necessary add to it or subtract from it, so that it does measure exactly one yard.

If I suspected that my particular ruler at home was inaccurate, and wanted to be very precise, I could go to the extreme length of testing my string against the agreed measure of one yard, a length of bronze kept at a constant temperature of 62° Fahrenheit at the Board of Trade.

This procedure is relatively straightforward. But to attempt to check a test which is designed to measure so elusive and indefinable a quality as intelligence, is quite another matter. There just is not, nor could there be, any objective criterion, against which the test can be assessed.¹

Such criteria as have been used, therefore, are admittedly subjective, that is, they reflect the opinions of certain people as to what constitutes intelligence. If these criteria are influenced, for instance, by social considerations of any kind, then, of course, these immediately become of crucial importance, since the criteria of intelligence once

¹ "The validation of intelligence tests . . . is particularly difficult, since we possess no objective criterion of intelligence, etc., with which to compare them." Vernon, 175.

established, are embodied and perpetuated in intelligence tests.

There are two methods which have been commonly used to validate tests. The first is closely akin to that of test construction. Once a test has been constructed in the way described, it is given to a different, and probably a larger, sample of children; these again have been arranged in an order of intelligence by the teachers. If the new results of the test with this larger group also correspond reasonably closely to the teachers' judgment, the test is regarded as a valid test of intelligence, and, as such, it may find its way into general circulation.

Now, teachers' ratings of children's intelligence are often profoundly influenced by what are, as far as intelligence testing is concerned, entirely extraneous considerations. For instance, if the child is industrious at school, attentive, co-operative and willing, a teacher may be inclined to rate him high for intelligence; on the other hand, children who dislike school, get into trouble, and do not work well, possibly for emotional or other reasons, are likely to get a low rating. Similarly, teachers may sometimes, quite unconsciously, be biassed in favour of a child who is well dressed and has no accent. Finally, a teacher's rating is bound to depend to a considerable extent on the child's educational attainment, which, as has already been argued, may itself partly depend on all sorts of social factors independent of the intellectual make-up of the child.

For all these reasons, teachers' estimates of intelligence are liable to be strongly influenced by social considerations, and on the whole to favour the middle-class child. For this reason they have been described by psychologists themselves as "highly fallible".¹ To validate a test in this way is bound to lead to the embodiment in the test of a criterion of intelligence which discriminates against the working-class child.

Teachers' estimates, though so clearly unscientific guides, were used until quite recently to validate tests. Even psychometrists must, therefore, admit that much unfairness has resulted for thousands of children in selection, based on these

¹ Vernon, 175.

tests. Even more important, the tests evolved in this way, have established criteria of intelligence which have been perpetuated by the continued use of the tests.

The second method of validating a new test is to check it against an old one. This is quite simply done. The two tests are given to the same group of children; if both put the children in roughly the same order, the new test is considered valid. This may seem to be satisfactory until one asks, how was the other test used itself validated—what claims has it got to represent a standard or criterion of intelligence? There can only be two answers to this, the other test was itself either validated against a third, earlier test, or it was validated against the estimates of teachers.

This second method is, therefore, a replica of the first at one remove. The test that is used itself embodies all those social considerations already mentioned. The only difference is that it is less trouble to validate a test in this way. The method is, if anything, even less exact, precisely because it is less direct.

There is one intelligence test which has often been used for the validation of new tests, but was not itself fully validated against teachers' estimates, although these were used. This is the original Binet-Simon oral test, administered to one child at a time.

First evolved nearly half a century ago, for the purpose of diagnosing mental defect, the Binet test differs from modern group intelligence tests in many important respects. It includes, for instance, a group of different questions for each age level, as well as a whole variety of questions which differ qualitatively from the ingredients of the normal verbal intelligence test. For instance, the child is asked to give change for money, to name coins, to do simple monetary addition, to repeat a number series, to name the months of the year, to define certain objects, to make rhymes, to interpret pictures, and so on.¹ The test, therefore, does not set out to measure the child's supposed capacity for relational thinking ("g"). It aims rather, by including different kinds of questions

¹ Some of the tests of information were dropped from the New Stanford Revision of 1937.

based largely on the child's everyday life experiences, to enable the psychologist to make a rapid assessment of a child's status in relation to the average performance of children on the test. The Binet test, therefore, though for long the only one in the field, is now criticised by leading educational psychologists as "a distressingly unscientific instrument" which measures "an unanalysed hotch-potch of abilities". For these and other reasons, says Professor Vernon, the validity of the Binet scales "is open to doubt"—that is to say, the test cannot claim to embody an objective criterion of intelligence. Consequently, although several group intelligence tests have been validated against the Binet-Simon test, this is no longer regarded as satisfactory by modern psychometrists themselves.¹

Psychologists are well aware of the inconsistencies in test construction and the bias that enters into tests through the methods of validation described. They have, therefore, sought to discover some method which would not be open to these charges. They claim now to have found it. "We can now", says Professor Knight, "employ an exact mathematical criterion to assess the extent to which any particular type of problem measures intelligence."²

The mathematical criterion is that of factor analysis. Put simply, the procedure is as follows: the constructor first makes up his questions, some of which he will later jettison. He sets them to a group of children. He then compares the result for each item (the proportions of right and wrong answers) with those for all other items; alternatively, he compares groups of

¹ Vernon, 173, 193, 195. In spite of the sharp criticism of the Binet test by nearly all leading psychometrists, it is still regarded by practising psychologists, especially clinicians, as, in practice, the most satisfactory mental measuring instrument. This is surely a reflection of the basic theoretical confusion in this field of work. One psychologist, however, blames the clinicians. "The retention of the Binet tests in a good deal of clinical work to-day, is alike a great tribute to the early genius of Binet and to the conservatism, rather than the scientific conscience of the present generation of clinical psychologists." R. B. Cattell, *A Guide to Mental Testing* (2nd Edition, 1948), 13.

Compare Vernon, who, although characterising the test as "distressingly unscientific", adds that from this test the psychologist "obtains a much more complete and practically useful view than he could from a more scientific measure of cognitive intellectual ability". Vernon, 194.

² Knight, 44.

items with each other. These comparisons are made statistically, that is to say, the constructor looks for a certain statistical pattern in the results. All items which fail to conform to this criterion are jettisoned. When the required pattern is achieved, it is claimed on mathematical grounds that the test items are consistent with each other, and so are measuring one and the same "thing"—and since the questions are those which the constructor assumes test intelligence, it is said that the test measures intelligence.

Although this method does not rely on teachers' estimates of the children's intelligence in the construction of the test, it clearly lays a far greater emphasis on the original choice of the questions themselves by the constructor, and it is precisely here that the subjective factor enters most obviously into the construction of the test. We may note that the kinds of questions asked are still much the same as those used in tests twenty or thirty years ago, before this method was developed. The significance of this new departure is that absolutely no attempt is now made to measure the test against any external criterion of intelligence; this is actually regarded as the main strength of this method of validation.¹

What emerges from this discussion of test construction and validation is that the criterion of intelligence embodied in the tests is one determined by social considerations. In the case of tests constructed and validated against teachers' estimates, as many were until quite recently, this was entirely self-evident, and admitted by psychologists themselves. Both the character of the questions and the external criteria of intelligence employed were clearly subjective. In the case of tests constructed and validated by the method of internal

¹ It is worth adding that the acceptance of this form of mathematical validation itself depends fundamentally on the acceptance of Spearman's theories. Possibly this is the reason why these theories, once vigorously attacked by other psychometrists, are now more generally accepted. Internal validation appears to be scientific, by contrast with the other methods, which are obviously subjective. Thus Cattell, who gives the impression that there is an interpretation of intelligence agreed to by all, says: "So long as controversy existed as to what was meant by intelligence, no test could be truly validated, and the design of tests perforce remained a matter of personal taste." Cattell, 5.

consistency, however, exactly the same limitations apply, only in a more subtle or veiled manner; they are now part and parcel of the mathematical techniques used. The only difference between the two methods is that the second places much more reliance on the questions, themselves chosen subjectively, and refers to no other outside judgment of intelligence at all. In this sense, the method of validating by internal consistency is even more questionable than the older method, however biased the outside judgments may have been. In sum, the attempt to attain greater objectivity has resulted only in a more subjective approach, in a greater reliance on the constructor's own judgment.

The Construction of Intelligence Tests: (c) Standardising the Test

There is yet another step in the process of preparing a test, that of standardisation. Though many tests used in the selection examination are not standardised, any test which is to be put on the market and used to calculate a child's mental age and I.Q. must go through this further process.

It has already been noted that a mental test result only indicates the standing of a child in relation to the other children who have taken the same test. If this status is to be interpreted in terms of an individual intellectual "label", what are called "test norms" must be established for each test.

In order to get "norms", the test must be set to a very large number of children of different ages, but approximating to the age-group for which the test is specifically designed. The large sample chosen (it should consist of several thousands of children) ought, in theory, to represent a complete cross section of the population from the brilliant to the imbecile, and from the highest social class to the lowest. When all the results are available, average scores for all the children, for each month of each age between, say, eight and thirteen, must be worked out. Once these averages are settled, the score of any child of a particular age may be checked against them. If his score falls exactly at the average, a child is awarded an I.Q. of one hundred; if his score is the same as the average score of children older or younger, his Intelligence Quotient

will be proportionately above or below one hundred.¹ The actual spread of I.Qs. obtained from any particular test, incidentally, depends entirely on the constructor's own decision. Some tests give much higher or lower I.Qs. than others, and, for this and other reasons, the I.Qs. got by children on different tests cannot be compared, a fact that comes as a surprise to many who have been led to believe that an individual child's I.Q. represents something quite definite.

Standardisation is important in this respect. It fixes as the "norm", the standard of achievement recorded by children who are subject to the widest inequality of opportunity. Once concretised in this way, these standards will become self-perpetuating, and wherever the test is applied, it will discriminate between children on what can only be described as class lines. It is evident that the proficiency of the children in the standardisation group to answer the questions in the test must itself vary with educational opportunity, home background, stimulus to achievement, and so on. It will do so the more clearly since, if the standardisation group has been carefully selected, it will include fixed proportions of children from different social and economic classes. Since, in a class society, *on average*, the higher the social status, the greater the likelihood that test questions of the kind described can be successfully answered; a test standardised in this way is bound to set standards of "intelligence" which are largely class differences disguised. It is an inescapable fact that the middle class child will always *tend* to do better than the working-class child, as a necessary result of the way in which the tests are constructed, validated and standardised.²

¹ The process sounds simple, but is, in fact, so complicated and so expensive that it is almost, if not quite, impossible to achieve in such a way that norms have any real validity, even according to the criteria of psychologists. Thus Vernon mentions the "almost insuperable difficulties" involved "in collecting standardisation groups which will be truly representative of all children of a certain age". He adds: "The origin and adequacy of many of the published test norms are so dubious that we would advise testers in schools to treat them all with caution, and when possible, to do without them." Vernon, 81-2. See his discussion of this subject, 79-87.

² The fact that individual children from very poor homes sometimes do well on tests in no way invalidates this statement.

Intelligence and Social Class

That, on average, the working class turns out to have less "intelligence", as measured by tests, than other classes, is a foregone conclusion. Nevertheless much energy has been devoted to proving this point with the aid of surveys of the relative "intelligence" of different social and economic classes or occupational groups, undertaken with intelligence tests.

Two tables given by leading psychologists are reproduced below and opposite.

TABLE I¹

INTELLIGENCE OF PARENTS AND CHILDREN CLASSIFIED
ACCORDING TO OCCUPATIONS

Class	Occupational category	Average intelligence quotient	
		Children	Adults
I.	Higher Professional: Administrative	120·3	153·2
„	II. Lower Professional: Technical Executive	114·6	132·4
„	III. Highly Skilled: Clerical	109·7	117·1
„	IV. Skilled	104·5	108·6
„	V. Semi-skilled	98·2	97·5
„	VI. Unskilled	92·0	86·8
„	VII. Casual	89·1	81·6
„	VIII. Institutional	67·2	57·3

The most important single conclusion that emerges from this discussion of the construction of tests, is that the "intelligence" measured by tests is a class-conditioned attribute. A class element enters into the practice of intelligence testing, at almost every stage; first, and most important, in the choice and character of the questions; second, in the method of

¹ Table I is taken from Burt, 14. In explanation, Burt says: "The data for children refers to pupils attending London schools only. The data for adults was largely obtained during investigations carried out for the National Institute of Industrial Psychology."

putting the test questions together, and validating the test as a whole; finally, in the process of standardisation. All these processes militate against success on the part of the more culturally deprived section of the population. It follows that an investigation of the class distribution of intelligence is bound to give precisely the result it does, and indeed, these results are the best possible confirmation of our thesis.

TABLE II¹

<i>Number tested</i>	<i>Occupational category</i>	<i>Average intelligence quotient</i>
30	Secondary School and University Teachers	151
25	Physicians and Surgeons	146.5
20	Civil Engineers	142
15	General Business Managers	137
250	Nurses	122
33	Carpenters	98
33	Machine Operators	96
12	Welders	87
19	Factory Packers and Sorters	78

Some American psychometrists² have recognised that intelligence tests "prove" something that is patently false,

¹ Table II is extracted from a larger table given in Cattell, 32. Terman analysed the social status of the higher I.Q. group of 1,000 unselected children: "Intelligence of 110 to 120 I.Q. is approximately five times as common among children of superior social status as among children of inferior social status. . . . The group is made up largely of children of the fairly successful mercantile or professional classes." Of I.Q.s between 120 and 140 he writes: "In a series of 476 unselected children, there was not a single one reaching 120 whose social class was described as 'below average'. Of the children of superior social status, about ten per cent. reached 120 or better. The 120-140 group is made up almost entirely of children whose parents belong to the professional or very successful business classes. The child of a skilled labourer belongs here occasionally; the child of a common labourer very rarely indeed." In other investigations, however, he found even brighter children "from very inferior homes". Terman, *Measurement of Intelligence* (1919), 95-6.

² A psychometrist is a psychologist specifically concerned with mental measurement (e.g. intelligence testing).

namely, that working-class children are more stupid than middle- and upper-class children. When they tested children in novel "real-life" situations, for example, constructing a "soap-box" automobile from old pram wheels and grocers' throw-outs, working-class children showed great resourcefulness of a kind seldom displayed by those more fortunate children used to receive their toys as presents. An individual intelligence test consisting of items of this character could easily be constructed, which would turn the tables printed above on their heads—it would embody a criterion of intelligence which favoured the working-class child just as the present verbal tests discriminate against him. But such a test would give such different results from existing tests that it would undoubtedly be rejected on the grounds that it did not test "intelligence". This is another indication that a class criterion of intelligence has by now become inseparable from the whole practice of testing.

The American investigators conclude that the first criterion for determining whether an item should or should not be included in a test, must be that it does *not* discriminate between children from different social and economic backgrounds. "In each mental system area, the test maker must select problems common to the culture *and practice* of all socio-economic groups in the population to be tested".¹ Hence the search for so-called "common culture", or even "culture-free", tests, which really would give everybody a fair chance. But in a class society there is not a common culture, while the search for a culture-free test is obviously a chase after a will-o'-the-wisp; the questions must be formulated in words or symbols of some kind, and the testee's familiarity with these will depend on his life experience, and so will differ from person to person and, in general, from group to group. The suggestion that human intelligence might be measurable by the development of a new kind of test which actually eliminates all words and symbols is an absurdity. One of the most important single differences between human beings and the animals is that the former can

¹ Davis and Havighurst, "The Measurement of Mental Systems", *The Scientific Monthly*, Vol. XXVI, No. 4. (My italics.—B.S.)

communicate through speech and its derivatives, reading and writing. To attempt to eliminate all words and symbols because, in a class society, many children lack the opportunity to master the basic skills, is to reveal the limitations of this society and to illustrate the dead end reached by mental testing.

Intelligence tests can never be "objective", can never reach the supposed elusive and independent inner essence of mind which psychologists attempt to measure. Instead they are bound sharply to discriminate against the working class. And since these tests are used, in practice, to select children for secondary education, this discrimination is particularly evident in this field.

Nor is this simply a conclusion from the foregoing analysis. Recently a detailed investigation was made by two sociologists interested in the effect of the 1944 Education Act on the social composition of the children at certain grammar and modern schools.¹ Basing their analysis on a careful assessment of the social background of the pupils, these investigators found that "The difference in social composition between the two types of school is striking. The secondary modern schools cater very largely for the sons of manual workers, especially the semi-skilled and unskilled". This class was also "markedly under-represented" in the grammar schools investigated; in none of these did they constitute as much as a quarter of the pupils, and in one only 6.9 per cent. Conversely, very few middle-class children were found in secondary modern schools. The investigators conclude: ". . . despite the changes introduced into secondary education by the Education Act of 1944, it remains the case that a boy has a greater chance of entering a grammar school if he comes from a middle-class rather than a working-class home". In explaining how this situation has come about, they rightly point "to the crucial role played by intelligence tests in the present selection procedure".

¹ A. H. Halsey and L. Gardner, "Selection for Secondary Education", *British Journal of Sociology*, Vol. IV, No. 1, March, 1953. This study is part of research being undertaken under the aegis of the Department of Sociological and Demographic Research of the London School of Economics. The sample investigated consisted of some 700 boys aged thirteen to fourteen years in four grammar and five secondary modern schools in Greater London.

CHAPTER IV

INTELLIGENCE TESTING AND SELECTION FOR SECONDARY EDUCATION

The Changing Intelligence Quotient

SELECTION for different kinds of secondary schools at the age of ten can only be justified on the grounds that the child mind has a single central factor ("innate all-round intellectual ability"), which determines the ultimate level of his intellectual powers, and which can be reliably measured at an early age.

Leaving aside, for the moment, the many theoretical problems involved in this hypothesis, and ignoring also the evident bias of intelligence tests already described, we may inquire, on the purely practical plane, whether the scores obtained by children on tests are *reliable* measures.

Intelligence tests can only claim to be reliable measures of an innate quality if children, tested a number of different times over a period of years, consistently obtain an approximately similar Intelligence Quotient.

In the 1920's and 1930's, it was widely held that a child's I.Q. remained constant as he grew older. This view was not, however, based on long-term studies of individual children, since, at that time, no such investigations had been carried through. It was based primarily on the results of testing groups of children two or three times at fairly short intervals, results which showed that, *on average*, the I.Q. remained roughly constant.

For instance, Terman, discussing this question in 1921, wrote: "speaking roughly, 50 per cent. of the I.Qs. found at a later test may be expected to fall within the range between six points up and four points down. . . . It is evident, therefore, that the I.Q. is sufficiently constant to make it a practical and serviceable basis for mental classification."¹

The last part of Terman's statement was repeated, while the qualification in the first sentence was conveniently

¹ Terman, *The Intelligence of School Children* (1921).

forgotten. All that Terman in fact claimed was that "roughly speaking" half the children tested a second time showed a variation of up to about five points. The other half showed an even greater variation, nor does he indicate how large were the individual changes. Clearly this is not convincing evidence for claiming that the individual child's I.Q. remains constant; nevertheless it was consistently suggested that this was so.

The theory of the constant I.Q. has, however, recently had to be abandoned as a result of long-term researches undertaken primarily in the U.S.A. These have shown beyond any doubt that children's scores vary from year to year, some steadily increasing, others decreasing, yet others oscillating up and down although usually showing a long-term trend. For a child's I.Q. to remain the same year after year is entirely exceptional. Further, it has been demonstrated that the longer the time interval between the first and the last test, the greater, in general, is the discrepancy between the scores.¹

In view of this it can hardly be claimed that the tests are a reliable measuring rod of that supposedly innate and unalterable quality, "intelligence." Children's scores on a particular test at the age of ten have significance for that moment in time only. If the same test were given to the same group either a year later or earlier, the scores would almost all be different, some considerably so, and the actual order in which the children were placed would also be very different. Practically this means that the group of children selected for the grammar schools by a certain test at ten would be different from the group selected at nine or at eleven or twelve, even if a proportion of the children were in each group.

In addition, all kinds of influences may affect the child, and so his score, under the conditions of the actual selection examination; influences which the psychologist would regard as strictly irrelevant. For instance, the child's attitude to the test and his own emotional reaction at the time will, to some extent, determine his success. If he is sick or tired, or suffering from any degree of nervous strain, he may not do himself

¹ See *Transfer from Primary to Secondary Schools*, N.U.T. (1949), Appendix iii, by Dr. C. M. Fleming.

justice.¹ He may be unfamiliar with examinations, become overawed, and muff his papers. There are half a hundred possible reasons of this kind why a child may do less well than he normally would, or again why some children might do better than usual. It has even been shown that the way the test is supervised, whether strictly or slackly, has a profound effect on the children's scores.²

Clearly children cannot be compared to machines giving always a constant output. On the contrary, the way they behave at a particular moment may depend on all kinds of complex and subtle influences. For this reason alone, a group intelligence test score is slender evidence on which to base a final judgment of a child's ultimate intellectual development. Quite apart from this, the tests themselves are very unreliable as guides, partly owing to differences in methods of construction and validation. "Few experienced persons" writes Professor Vernon "appear to put much trust in an individual's group test score, not only because of prejudice or conservatism, but also because different group tests are known to yield remarkably discrepant results. . . . A child who is given two or more may obtain I.Q.s. differing by as much as thirty or even forty points."³ One might add that practically no child will get exactly the same score if given the same test twice. And yet, as Mr. Clegg has pointed out, success or failure in the selection

¹ The degree of strain imposed on children by this examination is not commonly realised. One teacher who noticed symptoms of anxiety and worry in her class a year before the examination, did a careful investigation and came to the conclusion that the examination was "a positive danger to the mental and physical well-being of many children in my class". Several showed signs of nervous instability, many complained of disturbed nights, especially on the eve of the examination. "I had a smashing night's sleep—I took four aspirins." Their dreams are significant. "I had passed it, and got a bicycle but it was in pieces"; "I had a nightmare and went in to Mummy"; "I dreamt of fainting halfway through"; "I went to sleep and woke up crying". The prizes offered by parents to this one class included: sixteen new bicycles, three watches, three puppies, a bedroom clock, a portable radio, a tennis racket, a "perm", a pair of roller skates, etc., "all", says the teacher "built up the tension, and sharpened the children's perception of their parents' fear". *Journal of the Institute of Education of Durham University*, Vol. 4, No. 23, May, 1953 (article on "The Scholarship").

² Vernon, 190, note 2.

³ Vernon, 193.

examination at ten is often determined by a decimal point on the examination as a whole, an examination dominated by one particular intelligence test, which, of course, puts children in a different order than would be the case if any other intelligence test were used.¹

Psychologists themselves are, of course, aware of the limitations of group intelligence testing. Thus Vernon concludes that such tests "are not (very useful) for obtaining trustworthy information about individuals", although they have their uses in the testing of groups, and for large-scale experiments.² Sir Cyril Burt, one of the two psychologists who gave oral evidence to the Spens Committee, has himself said: "No predictions are so confidently offered by the educational or vocational psychologist as those which are based on some such factor as 'g' or general intelligence. Yet again and again his forecasts are falsified."³ This is the expert's view, yet in selection the results of these tests are treated as if they were trustworthy and normally given great weight; and, of course, as far as parents are concerned, it is the individual child and his future opportunities that matter.

Coaching for Intelligence Tests

The fact that an individual child's I.Q. varies from test to test, as well as from day to day and from year to year, is itself an indication that these tests are scarcely satisfactory instruments on which to base, not only the practice but also the whole theory of selection. But recently mental testing has suffered a much severer blow than any that have gone before. It has been clearly established that coaching in the "tricks of

¹ In view of this admitted fact, what can be made of the following claim on behalf of the Moray House Intelligence Tests, which are very widely used in selection examinations throughout the country (it is made in a pamphlet written to explain and publicise these tests to local authorities): "The discriminating power of Moray House Tests is such that it is worth taking these quotients [I.Qs.—B.S.] to half points in order to avoid ties (though this does not, of course, mean that two repetitions of different Moray House tests will agree to half a point!)" The exclamation mark is the author's. Godfrey H. Thomson, *What are Moray House Tests?* (no date).

² Vernon, 193.

³ Burt, *Factors of the Mind*, 1940, 229-30.

the trade" can have a profound effect on children's test results. Late in 1952, Professor Vernon announced that the average rise in I.Q. which was obtained from a limited amount of instruction in the technique of answering test questions was as much as fourteen points. One investigator actually raised the average I.Q. of a complete class by seventeen points after four hours' work, while with a similar class he obtained an increase of sixteen points after one hour only.¹

Professor Vernon himself pointed out the significance of this discovery. The typical cut-off point for a pass into a grammar school is supposed to be at an I.Q. of 115. Normally 17 per cent. of an average class of children may be expected to pass this borderline, and so win a place. But if this same class were coached and the average I.Q. rose fifteen points, exactly half the class would pass the borderline. In other words, 33 per cent. of the class who, without coaching, would not have qualified for a grammar school, would do so after coaching.

Coaching for intelligence tests has, of course, been going on for a long time. Parents, not unnaturally, have bought practice test booklets and given their children instruction. In some junior schools the children spend many hours on different kinds of test questions. It has been known that this kind of coaching produced good results, but the implications for testing were so serious that this undoubted fact had been ignored. At a meeting of some two hundred Middlesex teachers in 1952, Professor Vernon, in his own words, "tried to play down the seriousness of coaching". He continues: "I was informed from the floor in no uncertain terms how widespread it

¹ Vernon, "Intelligence Testing", *Times Educ. Supp.*, January 2nd and February 1st, 1952. Professor Vernon later reduced the average rise to 11 points, indicating that there had been some confusion about the norms of the tests used. He reiterated, however, that "an appreciable proportion of the boys who took part in the experiments did show rises of 15 up to 20 or more I.Q. points" (*Times Educ. Supp.*, April 24th, 1953). In the original articles announcing his results he stated that these had been "substantiated by numerous experiments" other than those done under his aegis. In another article he stated, in answer to critics who asserted that the average gain was less than 14 points, that his figure was supported "by every other comparable research (carried out by six different investigators in three different countries) that has been done in this field" (*Times Educ. Supp.* December 12th, 1952). See also letters in the same journal, December 26th, 1952.

was in the country".¹ Consequently, he embarked on the research outlined above. He found that his conclusions paralleled those of other researchers in the 1920's and 1930's; conclusions, incidentally, to which little or no attention was paid until it became impossible to avoid the issue.

It is natural that psychometrists should have tried to ignore the very considerable changes in test scores that result from coaching. Until recently, the *cornerstone* of psychometry has been that intelligence tests measure, at least approximately, the same inherited, unchangeable quality of mind—intelligence; and it is on this assumption, and this alone that their use in selection—and indeed selection itself—has been justified to the public. If a local authority can say to a protesting parent: we have scientific evidence that your child simply has not got enough intelligence to profit from a grammar school education, the parent has no alternative but to accept this dictum.

And yet it has been shown beyond any doubt that children can be taught to do intelligence tests, just as they can be taught to do English and arithmetic, chess and crosswords. If the reader will refer back to the examples given in Chapter II, he will recognise that there is nothing unteachable in the kind of questions or problems set. Teachers and parents, of course, have been aware of this, the number of practice tests on the market is sufficient indication of their wide and general use.²

Vernon's publication of his findings immediately raised a flood of controversy among psychometrists. Some asserted that the effect of coaching was not so great as Vernon claimed, but these he answered effectively. In any case, the argument as to whether the average gain from coaching is fourteen points or ten points or even less is irrelevant to the main issue. Dr. Alexander, psychologist and administrator, wrote an article

¹ Vernon, *Times Educ. Supp.*, December 26th, 1952.

² The situation was well summed up by a correspondent to the *Times Educational Supplement*. (February 15th, 1952):

"That intelligence tests are susceptible to the effects of coaching has been suspected by practising psychologists for some time, has been known by teachers for years, and has never been doubted by parents."

in the official journal of the Association of Education Committees, claiming that any teachers "guilty of special preparation of children for such . . . tests are guilty of cruelty to children just as much as those who appear in court for physical cruelty to children". Adding that it was, indeed, "perhaps a more serious offence" than the latter, he concluded "for a teacher to be guilty of such an offence should be proper grounds for striking his name from the list of those qualified to teach".¹

Clearly this question engenders much heat. But surely it is psychologists and administrators, whose claims have been proved false, who are at fault, rather than parents and teachers. No professional organisation of teachers has, to the writer's knowledge, ever committed itself as to the scientific and objective character of these instruments. In any case, Dr. Alexander's solution—that there should be no coaching—although supported by a few psychometrists, has naturally not been taken very seriously. As this step is clearly impracticable, many mental testers attempt to argue that the problem will be overcome if *all* children are equally coached for this test, and in order to facilitate this, they have produced booklets giving guidance on how to coach, including practice tests for use in the schools.²

But the peculiar and often absurd questions in tests were devised in this form precisely so that they should be "new" to all children and so fair tests of innate ability and not of acquired knowledge! Now that it is proposed that all children should be taught how to do these questions, it is clear that this position can no longer be maintained, and that tests will

¹ *Education*, June 6th, 1952.

² W. S. James, Lecturer in Education at Bristol University, writes: "In the two counties where I serve as Chief Examiner, we have introduced coaching for intelligence tests into all primary schools (for limited periods B.S.). . . . With this end in view, a booklet will very shortly be produced, giving lessons and practice tests for use by pupils in authorities' schools during the few weeks before the examination" (*Manchester Guardian*, January, 1952). A review commending this booklet says: "Instructions are clearly printed in bold type, and in places are worded so as to create in the child's mind the idea that answering the questions is a pleasant pastime and not an ordeal" (*Schoolmaster*, March 28th, 1952).

chiefly measure differences in opportunity. For there is, of course, no way of ensuring that all children are equally coached.

First, there is the difference in teachers: "It should be recognised . . ." writes one psychometrist, "that universal coaching could very well introduce much greater unfairness. Children in schools with a high standard of teaching will gain more from their instruction in intelligence tests than others, and the chief virtue of the test, that it compensates for inequalities in teaching, will not only be lost but turned into an additional handicap for children from the less efficient schools."¹

Second, there is the difference in the attitude of the children to this peculiar sort of "lesson". Some will be frankly bored, and who can blame them, especially since the "best" test questions are those with no meaningful content at all. And, if one can hazard a generalisation, it will be the children with most spirit in them who will pay least attention. Only the docile could easily submit.

Thirdly, how can one ensure that all children are coached for an equal length of time? This is obviously quite impossible. Some psychometrists argue that this does not matter, claiming that once children have learned the tricks in some three or four hours, it is difficult to produce any further improvement, however long they are coached. Hence Vernon's suggestion that coaching for all should take only three or four hours; "there seems to me", he says, "convincing evidence that any teacher or parent who spent longer on coaching would be wasting time and possibly even reducing the pupil's efficiency."²

The difficulty is that neither teachers nor parents are likely to be convinced by this argument, and for a very good reason. All the researches quoted have been based on *average* results;

¹ W. G. Emmett. Reader in Educational Research, Moray House, University of Edinburgh. *The Use of Intelligence Tests in the 11 + Transfer Examination*. Dr. Emmett supports Dr. Alexander: no one should be coached. Compare Vernon: "There seems to be little difference between different teachers as coaches", "Coaching for All Advised", *Times Educ. Supp.*, February 1st, 1952.

² Vernon, *ibid*.

this, as we have seen, is the common practice of psychometrists. But the teacher is faced with a class of individuals, and of course the parent is interested normally in only *one* child. There is *no* evidence to show that the individual child, given intensive coaching over a long period, his co-operation being maintained by all kinds of incentives, will not increase his I.Q. score by well over the average; he may well continually increase it, if at a decreasing rate, up to a very high point. And the methods of teaching "intelligence" will, with universal practice, certainly improve.

While psychometrists argue among themselves as to whether children should be officially coached or not, no way has or can be found out of the present impasse. If all are coached (a sufficiently futile process from the educational angle) the test results will measure differences in the amount and effectiveness of coaching. If coaching is officially frowned on, test results will still measure these differences, since, in practice, coaching will go on. In either case, a new element of unfairness is introduced into the selection examination. In sum, the revelations as to the effect of coaching have cast the very gravest doubts on the theory that "intelligence" exists and can be measured by tests.¹

The Validity of Selection: (a) A Question without an Answer

The defects in the practice of intelligence testing, summarised in this chapter, have led to much heart searching among teachers, local authorities, psychologists, and indeed among all those concerned with the unhappy business of sorting children out at ten or eleven. Nobody is satisfied with the present methods or procedure, least of all the parents, as

¹ Professor Vernon has suggested that coaching for intelligence tests, until recently regarded by everybody as educationally indefensible, may, in fact, be educationally desirable, since the "skilful use of intelligence test material" in school may "even perhaps" not only increase the children's scores, but also their ability to "use their brains", just as teaching in English or Mathematics may do. If it is once admitted that children can be taught to "use their brains", i.e. to act more intelligently, the whole case for selection on the basis of *inherited* intelligence is logically exploded; since the *only* rational justification for selection lies in the supposed innate and *unalterable* differences between children, so far as "intelligence", at least, is concerned (Vernon, *ibid.*).

the pages of the popular and the local press abundantly testify. In particular, it is the intelligence test that is most sharply criticised. The I.Q. is under fire.

One county authority, Hertfordshire, announced early in 1953 its intention of cutting "the knot in which intelligence testers have entangled themselves" by dropping these tests from the selection examination, chiefly for the reasons given above. Other authorities are trying to work out methods of selection that put less emphasis on these scores. Articles in the educational press describing these methods reflect this unease. "Selection tests for secondary education are now under hot fire, and some of the shots are going home", writes a reviewer of a pamphlet on selection in Wiltshire.¹ "That there is widespread dissatisfaction with the present system of selection for grammar schools needs no emphasis".² This, it may be noted, was written by a grammar school headmaster; there is no "system of selection" for modern schools. When Hertfordshire abolished intelligence tests, the *Schoolmaster*, organ of the National Union of Teachers, published a cartoon of a tank breaking through a wall described "I.Q. barrier", and headed the cartoon "Hertfordshire strikes again".³

But selection cannot be saved simply by abolishing the "intelligence" test, which has hitherto been the keystone of the whole system. What is the alternative? To hand over selection for grammar schools largely to the grammar school headmasters (as in Hertfordshire and Wiltshire), or to the primary school headmaster (as is apparently proposed in the West Riding), or, alternatively, to include different *kinds* of tests, (essay papers, comprehension tests and so on), as various other authorities are doing, does not solve the problem at all. Fundamentally the same kind of decision has to be made by somebody. Children must be sorted out at the early age of ten according to predictions made about their future intellectual development. The basic assumptions of intelligence testing must therefore underlie these "new" methods as well. The only

¹ *Times Educ. Supp.*, November 7th, 1952.

² *Times Educ. Supp.*, October 3rd, 1952. F. C. Happold. Headmaster of Bishop Wordsworth School, Salisbury.

³ *Schoolmaster*, January 16th, 1953.

difference will be that these methods, relying as they do to a greater extent on the personal judgment of one or two people, can make no claim to scientific validity at all. They represent an advance, therefore, only in this sense, that with the relegation of intelligence tests into the background, it becomes impossible for anybody to maintain that selection is a scientific procedure. The case against separating children into different groups at the age of ten becomes proportionately more overwhelming.

What is the answer of the psychometrists to these developments? It is a firm reiteration that intelligence tests are the best, the most "reliable", the most "valid" instruments for use in selection. Vernon, although expressing interest in the Hertfordshire experiment, described it as "a regrettable step."¹ Nevertheless, psychometrists themselves are unhappy about the situation. Some see little prospect of further refining or improving selection procedures: "we . . . (have) virtually reached the limit of valid selection under present conditions"²; and, referring to coaching, they complain that their work has been misunderstood: ". . . our present controversy would never have occurred had not educationists misused our instruments".³ Mr. Ben Morris, Secretary of the National Foundation for Educational Research, points out that "objective tests are being used for purposes for which they were not originally intended". They were, he claims, intended for educational guidance, not for selection, though they are still the best instruments for the latter purpose yet known. He concludes: "It is, however, up to the public to see that a system of secondary education is created in which effective educational guidance, as distinct from selection, becomes possible".⁴ He is, of course, perfectly right, but it must be noted that hitherto the public has been lulled into accepting the present selective system of education precisely on the grounds that these tests *were* valid instruments for selection.

By continuing to maintain that intelligence tests are the best

¹ *Times Educ. Supp.*, January 16th, 1953.

² Vernon, *Times Educ. Supp.*, December 26th, 1952.

³ Vernon, *ibid.*

⁴ *The Times*, August 29th, 1952.

instruments for selection, psychometrists are patently putting themselves in a false position. In the nature of the case, there can be no way of knowing what is the best method of selection, or, to put the same point in another way, the very nature of selection makes it quite impossible to assess its effectiveness. For that reason, the question "what is the best method of selection?" is of the same order as the old conundrum: "Have you stopped beating your wife?". It is impossible to answer definitely one way or another. If children have *not* got different quantities of the inherited quality "intelligence", which administrators can measure, if, in other words, there is no scientific means of differentiating between them at the age of ten, then there can be no "best" method of selection at all; the task is patently impossible.

When psychometrists claim that intelligence testing is the best method of selection, what they mean is that these tests appear to predict children's "success" at the grammar school (according to certain scholastic criteria) very slightly more effectively than other tests given to the same children at ten in the selection examination.

The claim is based on a comparison of the marks of certain children in intelligence and other tests at ten with their marks in grammar school examinations taken at fifteen or sixteen; each individual selection test, for instance English or arithmetic being compared with these marks independently. The procedure followed may be briefly outlined, for this is an important argument.

If a hundred children win places in a given grammar school, their I.Qs. can be listed in descending order from the highest of, say, 145 to the lowest of, perhaps, 112. Four or five years later their examination marks in a number of different subjects can be added up and their average mark worked out; the children can once again be listed in descending order from the highest to the lowest. These two orders may now be compared, and there is a method of expressing the *degree* of relation between the two sets of figures in one statistical term—a correlation coefficient. For instance, if the two sets of marks correspond exactly, with all the children listed in exactly the

same order at fifteen as they were at ten, then the correlation coefficient is a positive unity: $+1.0$. If the two sets of marks are exactly opposite to each other, e.g. if the top boy at ten is bottom at fifteen and vice versa, all the others reversing their positions correspondingly, the correlation coefficient is a minus one: -1.0 . The half-way position between these two extremes is expressed by a correlation coefficient of 0, implying, of course, that there is no relation at all between the two sets of marks. The intermediate figures between $+1.0$ and -1.0 , therefore, describe different degrees of likeness between two sets of figures.

When challenged recently to show that intelligence tests were the best predictors of grammar school "success", Professor Vernon quoted as being typical of the "ordinary English grammar school" a correlation between I.Q. and School Certificate results of $+0.44$,¹ a slightly higher correlation than was shown for other forms of assessment of children at ten.²

Vernon, in reporting this result, pointed out that "though the I.Q. is at least as good as the others, none of the correlations is high, and this explains why grammar school teachers find considerable discrepancies between entrance results and subsequent achievement."³

This is not in itself an impressive result when one considers all the claims that have been made for tests, and all the human problems involved in their use. But, even more important, though results of this kind may tell us something about the

¹ *Times Educ. Supp.*, August 4th, 1950.

² These were: the special place (selection) examination, involving educational attainment tests, and the primary school teacher's assessments of the children. The correlations here were $+0.42$ and $+0.43$ respectively.

³ Vernon, *ibid.* A correlation of $+0.44$ sounds reasonably high, but it actually describes a very slight degree of similarity between the two sets of marks. Suppose the test is to be used to select the best 20 per cent. of the ten year olds for grammar school entrance, on the usual assumption that 20 per cent. of the ten year age group *only* have the intellectual capacity to profit from a grammar school education and so to pass the Certificate examination five years later. This correlation of $+0.44$ would mean that out of every twenty pupils sent to the grammar school, twelve would be failures according to the second test at fifteen. That is to say, in the grammar school there would be a 60 per cent. failure rate in this second test.

relative efficiency of different kinds of selection tests (if we accept the criterion of "success" chosen), they operate within the closed circle of the grammar school; they tell us absolutely *nothing* about what might be called the absolute efficiency of selection. In other words, no one knows, or could possibly know, how "successful" the 80 per cent. of children who failed at ten or eleven would have been if they had won places at this type of school.

Obviously this is an unsatisfactory state of affairs. One way out of this difficulty is to sidestep it by simply assuming that the 80 per cent. of children who fail to get into grammar schools, will vary in their attainment of "success" at fifteen or sixteen, to *exactly* the same degree as those who passed the selection test. It is not worth trying to puzzle out a "meaning" for this assumption in terms of any practical criterion of "success" it is possible to imagine. It is a purely statistical conception.¹ But a psychometrist prepared to make this leap in the dark finds it quite possible to compute what may be called the *total* "efficiency" of the intelligence test, and, far more important, to produce a more impressive figure. By simply making this statistical assumption he can raise the correlation coefficient from the meagre $+0.44$ to $+0.70$. One investigator has even claimed a correlation of $+0.84$ on this basis.²

It is worth pointing out that many leading psychometrists regard the basic assumption described above as unscientific and unjustifiable. But nevertheless the idea that there is a high correlation between test results and grammar school success

¹ This conception would only be valid if it could be shown that children's educational development is absolutely independent of the type of school to which they go; that is to say, that this development is determined wholly by factors internal to the child. But this is clearly a ridiculous proposition.

² If the correlation of $+0.84$ represented anything meaningful, it would lead to the conclusion that in an area where 20 per cent. are selected for grammar school entrance, and this selection was made on the basis of I.Q. only (its purpose being to predict who is likely to be in the best 20 per cent. of pupils after five years), 35 per cent. of those sent to the grammar school would be failures at fifteen. McClelland, referring to a correlation of $+0.8$ in this connection, says: "These results show the uncertainty of any guidance given to a pupil solely on the basis of examinations and tests, no matter how complete or carefully conducted." Cf. McClelland, *Selection for Secondary Education* (1945), 124-5.

tends to get about, and naturally the general public is in no position to argue. In practice there is *no* way of finding out how any child would have done at a grammar school if he is, for instance, in a secondary modern school; it is, in fact, impossible to assess the efficiency of selection in any scientific way. Though intelligence tests may have a slightly higher correlation than other tests with later success at a grammar school, there may still be thousands and tens of thousands of children outside the grammar schools who would also have been equally "successful" had they passed at ten. And this, of course, is the only material point at issue.

The Validity of Selection: (b) Some Evidence from the Rejected

However, if we are really interested in finding out what children are capable of achieving, what the ordinary child is like, there are various ways in which it could be done, even within the limits of the present divided system of secondary education. But, as this matter is not at present apparently regarded as important, there are no researches to report; a few examples, mainly taken from the educational press, must suffice.

A recent article provides a good opening.¹ In this, a headmaster in an area with a high proportion of grammar school places, reports on his teaching of French to 1st form boys (aged eleven). He found in his class one boy (D) with an I.Q. of 105; another (A) had an I.Q. of 111, and had "just sneaked into a grammar school", since his total entrance examination marks (which included the results of other tests) were the lowest for the form; in another area, says the headmaster, "he would automatically have been transferred to a secondary modern school". What happened to these two boys? A became top of the class, "he was mopping it up and loving it". D came out fourth. And right at the bottom of the class of twenty-nine children was a boy with an I.Q. of 131, the third highest I.Q. in the class. Of three of his boys the headmaster concludes that they were "in this grammar school by the

¹ "Grammar School Entrants," by a Headmaster, *Times Educ. Supp.*, October 24th, 1952.

merest fluke, and I should not be surprised if one day they gain a modern language scholarship".

In another area the governors of individual grammar schools are allowed to award a small number of places in the school to boys who have been graded as below grammar school standard in the selection examination. The headmaster of one of these schools analysed the performance of forty-one such boys who, in other areas, would have been excluded from a grammar school. He found that "not only were the greater number of these boys well able to hold their own, but more than a third were above the grammar school average and several had reached an exceptional standard".

He also established that "the majority of (these) boys who have since done well had failed to obtain a grammar school grading because of a low intelligence mark". In this area, special attention is given to the examination, in an attempt to make selection as accurate as possible. But, concludes this headmaster, "those who base their opposition to the comprehensive school on the accuracy of the present system of selection would be well advised to seek firmer ground".¹

Unfortunately, few schoolmasters make investigations of the kind reported in these articles, but if some children who scrape into the grammar school do so well, how many who fail at ten would have done so? Some indication may be gained from the experience of those authorities which allow a few children a second chance of qualifying for a grammar school at thirteen. All such entrants failed at ten, that is to say, the selection test predicted that they were incapable of profiting from a systematic education. Of children in this category the Chief Education Officer for the West Riding states: "in many schools . . . transfer cases have been outstandingly successful. Some have gained open and State scholarships. A considerable number have gained County Major Scholarships. . . . At least one gained a first-class honours degree at the University with the

¹ "New Light on Secondary Selection," by a Grammar School Headmaster. *Schoolmaster*, June 12th and June 19th, 1953. Of the whole group of forty-one boys two "proved to be very weak and another five below average, eighteen seemed to be about average, eleven above average, and five outstanding".

University medal for the best student of the year. Many have entered Training Colleges.”¹

The great majority of secondary modern school children do not get the chance of proving their powers in this way. The assumption is that they are incapable of such sustained intellectual achievement. The Ministry of Education seems to suggest that they are only capable of learning through “practical activities”, gardening, woodwork, dressmaking and the like. Only one child in 22,000 from secondary modern schools gets to a university—proof indeed!

It was impossible to challenge this assumption, except theoretically, until recently. The Bournemouth Education Committee has, however, given it the lie, and in no uncertain manner. They ran two experimental courses for the General Certificate of Education at two ordinary secondary modern schools. Forty-eight children took the examination (at “ordinary level”) in 1952; some gained as many as nine passes, and the average was five. These results are at least as good as the average results in many grammar schools, and this, in spite of the fact that standards have been raised well above the pass level of the old school certificate examination. “It has been noticeable that some pupils have been inspired by the thought of a ‘second lease of life’ when admitted to the G.C.E. classes”, writes the Borough Education Officer; the two schools “have shown by their outstanding work what can be done by such pupils. Such a scheme demands hard work on the part of both staff and pupils, and they are both to be congratulated on the

¹ Clegg, 11. A very small proportion of secondary modern school children win a transfer at twelve or thirteen to a grammar school. It cannot be argued that these are all who are worthy of this “second chance”. This question has been investigated by the National Foundation of Educational Research. Mr. Ben Morris, summarising their conclusions, has pointed out that it is difficult [impossible?—B.S.] “to find a valid basis of comparison between children who have for one or more years been immersed in totally different environments and pursuing divergent courses of study”. He concludes: “The amount of transfer between secondary schools found to be necessary is, however, usually very low. This, unfortunately, proves nothing at all except that the pupils and the teachers in the schools have adapted to each other, or have come to accept each other. It proves little or nothing about the basic suitability or unsuitability of the children for the courses of study they follow.” *Education*, October 31st, 1952, 602.

success which rewarded their efforts". He adds: "I believe . . . other secondary modern staff and pupils would welcome a similar challenge."¹

The Bournemouth Education Committee's plan certainly, as they claim, "strikes at the root of the secondary allocation problem", and it is now proposed to institute G.C.E. courses in all the secondary modern schools in this town. But this, of course, does not solve what is politely called the "allocation" problem. To set up two different types of schools and then to give the same type of education in them is scarcely logical!² Nevertheless, Bournemouth has certainly exposed in a dramatic way that the validity of selection at ten is a chimera.

Pupils in some other secondary modern schools in the country are beginning to be given the opportunity to take the General Certificate, and there is no reason to believe that they, and their teachers, will tackle it any less effectively than Bournemouth.³ It is to developments like this, as well as to the scholastic successes by "ordinary" pupils in the new comprehensive schools in Anglesey, Middlesex, London, the West Riding, the Isle of Man, and elsewhere, that attention should be directed if we really wish to assess the validity of intelligence testing and selection.

Finally, something could surely be learned from the very different proportions of children given the opportunity of a grammar school education in different parts of the country.

¹ *Schoolmaster*, November 14th, 1952.

² The plan was tried out since Bournemouth do not wish to extend their grammar schools to meet the bulge in the birthrate which will begin to reach the secondary schools in 1956. Their existing grammar schools take about 24 per cent. of an age group, well above the average for the country.

³ A similar scheme operates in Southampton. In 1952, forty-one children, who had only begun to study for this course three years before (the normal length is five years), sat the examination, securing 127 passes in different subjects. Fourteen of these children then transferred to grammar school sixth forms (*Schoolmaster*, February 6th, 1953). In another authority in 1950-1, seven modern schools presented 176 candidates for the General Certificate at Ordinary level and twelve at advanced. Of these, 129 (73 per cent.) secured passes in at least one subject at ordinary level and ten (83 per cent.) at Advanced, the latter being equivalent to the grammar school sixth form work. This authority expects more secondary modern children to take the examination as more courses are provided. *Times Educ. Supp.*, September 19th, 1952.

This varies from about 8 per cent. to over 60 per cent.; the town of Nottingham, for instance, provides places for just over 11 per cent. of an age group while Gloucester provides for about 39 per cent.¹ What proportion of the population is endowed with sufficient "innate general cognitive ability" to profit from a grammar school course, is it a half or a tenth? This is a question to which the supporters of a divided educational system, involving a selection examination in which the marks have to be worked out to decimal places, should surely return an accurate answer, if they wish their claims to be taken seriously.

But more important from our point of view, is it a fact that the grammar schools in Gloucester, for instance, have a far higher proportion of failures in later examinations than those of Nottingham or Gateshead? If the theories of mental testing are true this should, in general, be the case. But no research has been done to find out the facts. In the meantime it can be said that whatever the proportion of the population at grammar schools, these schools themselves are curiously similar. The children sit for the same examinations, and, although each school has its ups and downs, the actual proportion of failures and successes does not vary greatly. In other words, the success of a school seems to depend not so much on the "intelligence" level of the children as on the quality of the teaching, a quality, incidentally, which psychometry consistently ignores in its dictums on education.

What conclusion can be drawn from these examples? The most obvious is that there are many children outside the grammar schools who could profit from a grammar school education, whatever their recorded "intelligence" level and their achievement in the selection examination as a whole. How many there are cannot be known, but recent developments have shown that the number is far larger than has ever been admitted as possible, and this fact alone points to the overall inefficiency and injustice of the existing system of selection.

It is, however, possible to draw two opposite conclusions

¹ F. C. Campbell, "Anomalies in Grammar School Placing". *Schoolmaster*, December 5th, 1952.

from this experience. Those who are dominated by the theories of mental testing and who subscribe to the doctrine of the normal distribution of intelligence, have now begun to argue that what is required is a whole hierarchy of different types of schools or courses specially designed to meet the requirements of children at each intelligence level. Some suggest that grammar schools should take not 15 per cent. of the population, but only 5 per cent., or even 0.5 per cent—the really *brilliant* intellects; there should then be many other grades of school or courses right down to that which takes the really “unintelligent” child, innately incapable of any intellectual achievement.¹

This, of course, reflects a pessimistic attitude to children and their “abilities”. But what, in fact, is the kernel of this proposition? It is a suggestion that the whole structure of the school system should be made to conform to what is an unverifiable assumption about the distribution of an indefinable quality.

It is quite possible to reach an opposite conclusion. The evidence of this chapter has shown that where the restrictions surrounding the admittedly limited and academic grammar school type of education have been even slightly lifted, children and teachers outside these schools have proved their ability, and this in an examination whose standards have been considerably raised during the last three years. They have, therefore, given the lie to the selection examination. This suggests once more that it is quite impossible to achieve a “valid” form of selection, and that intelligence tests, which provide the justification for the present system of selection, are open to the most serious objections as predictors of future intellectual attainments.

This conclusion is becoming more generally accepted as the evidence accumulates. For instance, the Professor of Experimental Psychology at Cambridge University, reporting recently on a five-year investigation into the use of similar tests to select medical students, said: “I think it is clear beyond

¹ Burt gives support to this view when he writes: “Obviously, in an ideal community, our aim should be to discover what ration of intelligence nature has given to each individual child at birth, then to provide him with the appropriate education, and finally to guide him into the career for which he seems to have been marked out.” *The Listener*. November 16th, 1950.

dispute that the predictive capacity of tests of this kind . . . is (with one possible exception) entirely negligible"; he is reported as adding that the view, once widely held, that tests of this kind reveal stable, relatively unalterable human properties, whether of intelligence or anything else, was almost certainly wrong.¹

The Failure of Mental Testing

Mental testing has, then, been proved to be a failure in practice; and indeed to so great an extent that some education authorities have already dispensed with "intelligence" tests, and others are considering doing so. Why then has so much time been spent in analysing and criticising these tests if they are already on the way out? The answer has already been given. So long as there are different types of secondary school, offering very different kinds of education and opportunities to children, so long must *someone* make a judgment between children at the age of eleven. The fact that "intelligence" tests are being discarded does not mean that the ideas behind them have been dismissed. On the contrary, these ideas permeate education at all levels, and inspire both teachers' judgments of children and the other kinds of examination which serve as substitutes for tests. Most English and arithmetic papers set for the selection examination are very like "intelligence" tests, while teachers required to stream young children, to keep school records for use when the decision is made about the child's future, or to set their children out in an order of merit can only do so according to some criterion. The criterion they tend to use is that of "intelligence". It is, therefore, necessary to underline the fact that the rejection of "intelligence" tests in practice, implies also the rejection of the concept of "intelligence". This is clear if we recapitulate briefly the course of development of testing.

It was precisely because it was impossible for such judgments between children to be made fairly, without prejudice,

¹ Professor Sir Frederick Bartlett, in an address to a section of the First World Conference on Medical Education. *Times Educ. Supp.*, September 4th, 1953.

and because the normal examination penalised the child from a poor home, that the "intelligence" test was first introduced in the schools. The idea was that, if the child's real innate powers could be measured, without reference to his acquired knowledge, then selection for scholarships would be truly fair. With the rapid development of the county secondary schools after the first World War, accompanied by the increase in "free places" to be competed for by examination, psychologists were faced with the demand for an "objective" test of this kind. They, as much as anyone, were aware how fatal was the decision made at ten, and how unfairly it operated against the less fortunate child. "A simple method of testing the abilities of children has become in educational administration an urgent practical need," wrote Sir Cyril Burt in 1921, "No appeal is more often addressed to the psychologist than the demand for a mental footrule".¹

In their attempt to construct this "footrule", psychologists set out with two hypotheses, without which their task would have been impossible, but for which there was as yet no scientific proof. They assumed (a) that children have certain fixed mental powers which can be measured with reasonable accuracy, and which remain much the same throughout life; (b) a necessary corollary of the first assumption, that these mental powers are inherited at birth.

Obviously there was no way of measuring these powers directly. The only thing that could be done, was to measure the *differences* between children, differences shown in the performance of certain basic mental tasks. The average performance of children in these tasks was worked out, and each child was then classified in an order in relation to this average. However, it was one thing to classify children in relation to each other, in answer to an insistent demand that children should be so "differentiated", it was quite another thing to claim that test results threw light on the individual child's inherited potentialities. It was in the effort to prove that they did, that is, to prove the initial assumptions of testing, that the various techniques, already described in Chapter III,

¹ Burt, *Mental and Scholastic Tests* (1921), 1.

were introduced. If it could be shown that test scores were always distributed in the same way, then it could be argued that tests were measuring the same "thing", i.e. "intelligence"; if it could be shown that scores remained constant, then it might be argued that "intelligence", as measured by tests, was an innate and unchanging power.

And so, gradually, a mass of data, and of theories derived from this data, were evolved; the aim was to establish that "intelligence" test results *prove* the existence of a mental power "intelligence", an inherited, unchanging characteristic. But the extent of the claims for "intelligence" tests soon began to vary with the extent of testing. When very few tests had been administered, the most extravagant claims were advanced with the greatest certitude. As testing became more general, and difficulties of various kinds emerged, the claims became progressively less exaggerated and less assured. Finally, to-day, when almost every child in the country is tested at a certain stage, and when the weaknesses of tests have become so obvious that they can no longer be hidden, psychologists make hardly any claims at all. They now hasten to assure us that we must *not* suppose that tests reveal "entities of the mind" or "the fundamental elements of which human minds are compounded". On the contrary, "factors" extracted from test results, and "intelligence" is just such a factor, are "primarily . . . categories for classifying mental tests and examinations".¹

¹ Some of the efforts to substantiate these hypotheses have not been referred to, for instance those arguments based on the results of testing twins. Psychometrists disagree in their interpretation of these results. Briefly, it is claimed that, on average, identical twins tend to have similar I.Q.s. while progressively greater differences are shown, in ascending scale, when fraternal twins, brothers and sisters, and random pairs of children are tested. Some psychometrists argue that, if "intelligence" varies in this way with genetical make-up then the likelihood is that it is handed on genetically, i.e. that it is a unitary mental trait and innate. This is yet another argument by analogy, arrived at statistically. It is not generally accepted as conclusive because twins and siblings have also an environment more similar than other pairs. In addition, the genetical theories here taken for granted have been shown to be open to much the same objections as theories based on "intelligence" testing, so that it is rather a case of the blind leading the blind. So far as parents and teachers are concerned there must always be anxiety lest twins are separated at eleven, for group tests have been known to place even identical twins widely apart.

Since absolutely no proof has been adduced that "intelligence" is a fixed quality of the individual human mind, it is obvious that there can be no proof that it is innate; the two propositions hang together. After half a century of research, and the widest practical use of mental testing, the original hypotheses on which the whole edifice has been raised remain unsubstantiated. It is now abundantly clear that testing is nothing more than a practically useful method of classification, a classification of children *in relation to* an arbitrary standard of "intelligence". That standard, as has already been argued, is necessarily one derived from our social practice. The brain worker or white-collar worker is socially more highly valued than the manual worker, no matter whether the former merely adds up lists of figures while the latter works a complicated machine demanding a considerable degree of technical knowledge and skill; B.B.C. speech is socially more acceptable than the dialect of the North Country. Social judgments of this kind are incorporated in tests, which discriminate between children primarily according to vocabulary and the capacity to manipulate the printed word in certain ways, and not according to their potential usefulness to society and humanity. As a result, many teachers in grammar schools now complain that it is the intellectual "spiv" who profits from the "intelligence" test, while the child of true worth is passed over.

In spite of the failure of mental testing, those interested in preserving the present system of secondary education still cling to the conception of "intelligence", refusing to recognise that the practical failure implies also a theoretical failure. But this, of course, is the case, and with this failure the whole selective system of education stands condemned. Obviously there can be no return to the equally arbitrary and unfair selection procedures which preceded testing. The conclusion must be that the fruitless and sterile search for a perfect selection technique should be abandoned, the divided or subdivided system of education be ended, and that, in its place, we begin to make secondary education for all a reality, and provide the opportunity for the systematic and purposeful teaching of all children alike.

CHAPTER V

THE COMPREHENSIVE SCHOOL

Individual Differences and the Role of Teaching

THE teacher who sets out to *educate* the children under his care, meets them as human beings. He first searches for ways of welding his class together into a group, knowing that learning is not a purely individual affair which takes place in a vacuum, but rather a *social activity*; and that the progress of each child will be conditioned largely by the progress of the group as a whole. He begins, then, by concentrating on the interests children have in common, rather than by underlining their individual differences. As the work of the class takes shape, however, individual children make varying contributions; some may draw well, others may be good readers, others may be quick with figures. The teacher's task is not, of course, to see that the children who are good at some particular activity shine to the detriment of their companions, but rather to see that each child contributes to and enlivens the work of the class as a whole, and that all encompass the necessary basic skills. There is no better means of ensuring this than the stimulus given by other children within a cohesive group.

The teacher who approaches his task in this way starts from a point of view diametrically opposed to that of mental testing. His attitude is essentially humanist. He recognises that learning is a process of human change, not merely the formal acquisition of knowledge. Above all, he starts out with the conviction that all the children under his care are *educable*.

This is not to say that he shuts his eyes to obvious differences in attainment. But it does mean that he refuses to be blinded by the assumption that degrees of attainment reflect degrees of "intelligence". He recognises that to ask: "Why is David better at reading than John", and to answer: "Because David is more intelligent", is little but a play with words; the answer is, strictly speaking, irrelevant; rather than explaining *why*

David does better than John, and *how* John can be helped, this kind of answer simply suggests that John's parents are at fault and there is nothing the teacher can do about it.

To the important questions that the teacher asks about children's mental development, psychology has, as yet, produced little in the way of answer. Psychometrists have classified and attempted to measure hypothetical mental "abilities", but this very occupation has excluded adequate consideration of *how* children learn and change. They have suggested that these abilities are hereditary, but this again is no explanation of their nature. In this connection, all that can be said with a strict regard for scientific accuracy is that each child is born with a physiological make-up which *conditions* his development, which provides, as it were, *the point from which he starts*. There is no scientific evidence for the claim that the child's "mental capacity" is *determined* by this original endowment.

On the contrary, study of the brain and the higher nervous system suggests that precisely the opposite is the case. Pavlov, the great Russian physiologist and psychologist, was summarising a life-time of research when he wrote: "*The chief, strongest, and most permanent impression we get from the study of higher nervous activity by our methods, is the extraordinary plasticity of this activity, and its immense potentialities; nothing is immobile or intractable, and everything may always be achieved, changed for the better, provided only that the proper conditions are created.*"¹

These conclusions certainly lend no support to the theory of "fixed abilities". Rather they add conviction to the view that human beings are capable of change, of development, and that it is the job of the school and the teacher to provide the proper conditions for human development in this sense. Nor should these conditions differ for every child, or for groups of children. Under the influence of psychometry, we have tended so greatly to emphasise individual differences that we have been blinded to the simple fact that *all* children, except in the case of serious physical defect, develop according to a certain

¹ I. P. Pavlov, *A Physiologist's Reply to Psychologists*.

fundamental pattern. The conditions for human development for all children must, therefore, be broadly similar. It is not the school's function to discriminate between children, treating different groups or streams in a fundamentally different way. On the contrary, it must find the best way of helping all children to find the common path to maturity.

Nevertheless, at present children will enter the junior school with different levels of attainment in all activities, and especially in the important skills of reading, writing and arithmetic. It has already been suggested that these result primarily from the differing content of each child's activity, which is itself dependent on the varying opportunities of different social classes. In fact, the child's mastery of any field of activity does not and cannot arise "spontaneously", and, of course, teachers particularly recognise this. No child will be able to read well, or to play football or the piano, unless he has practice in these skills, unless he applies himself systematically to learn them, even if only in play. Only in this way will he develop the mental and physical co-ordination necessary to make a success of these activities. Here, it is clear, the level of achievement at any particular moment depends not so much on the child's inborn characteristics, as on the degree to which these have been modified in activity—in the process of practice. What is decisive is the opportunities for engaging in different activities, and the help the child is given to master these, to develop new abilities and to make new achievements. The teacher is specifically skilled at this extremely complex and important task. He sets about it in a systematic manner. To do precisely this is the essence of education.

The degree to which the teacher is successful in this aim will depend to a considerable extent on his attitude to his job; and this, in turn, is coloured by his attitude to children. If, led astray by the theories of mental testing, he believes that the level of a child's achievement is *predetermined* by the nature of his inborn "abilities," then all he can aim to do is to help children to make their inborn abilities actual. He does not conceive that a child can rise above his inheritance. From the start, therefore, he does not set out to educate in a creative way.

If, on the other hand, the teacher believes that the development of a child's abilities depends primarily on the careful control of his activity in school, that is on the nature and character of his own teaching, then his attitude will be entirely different. In this case, he holds that it is possible to *educate* the child in the fullest sense of the term, and he will exert his skill and his art precisely to assist him constantly to rise above himself, to make ever new achievements, and to overcome all obstacles in his path. He will recognise that the first condition for achieving this aim for *all* children in the school, whatever the initial individual differences between them, is the abolition of the streamed system of education.

The separation of children into different groups, labelled good, indifferent and bad, serves only to perpetuate these initial differences and even to create new ones. But these differences are, in an important sense, irrelevant to the school's purpose, which is to give a common, systematic character to children's activities in order to achieve certain specific educational aims. A school which sets itself other aims than this virtually abdicates its primary educative function.

The Common Junior School

The common junior school must be so organised that all children are given the opportunity to develop abilities. For this reason, children entering the school for the first time should be divided into different classes, not according to test results, but simply according to the rooms and teachers available, as is already done in schools which have abolished streaming.

At the outset, each class will include children of varying levels of attainment in different subjects; but this need not cause dismay. It is the task of the junior school to lay the foundations of learning; if in some cases these foundations have already been well and truly laid, so much the better, the task becomes—or should become—the easier. But education is not a race, to be won by the early starter or the fastest worker. It is much more than this. The common junior school will not, therefore, concentrate on picking "winners". Instead it will set out to provide the necessary opportunities for

all-round development. The aim will be to raise the educational level of each class, by carefully planned stages, and to ensure that all children participate in the advance.

What problems would this radical change give rise to? First, it is difficult to plan a common education unless there is agreement on certain fundamentals; for instance, at what age children should be taught to read and write. At present there is no clear understanding on this point. Some infant schools embark seriously on reading not long after the age of five, others do not attempt to introduce it until six, and methods of teaching vary widely. The result is that the average junior school intake at seven includes both readers and non-readers, and this immediately poses a problem for the junior school. It is usually overcome by separating the two groups and placing them in different grades.

In the interests of the children, this question must be decided one way or the other. On the Continent, reading and writing is often not taught in a formal manner until the child enters the first grade at seven. If we followed this practice here, this function would devolve entirely on the junior school. But at present it is infant, rather than junior school teachers who are equipped for the task of teaching reading, and the child who cannot read at seven has already fallen fatally behind in the race.

A school which abolishes streaming must make universal reading its first major objective. Success can be achieved, as experience has proved, by giving the non-readers instruction in special small classes each day. Progressive familiarity with books and practice in writing should, in any case, be the staple of the junior school course for all children. The experience of schools for backward children shows that there are very few who fail entirely to learn to read, given good teaching, plenty of individual attention and the necessary stimulus to achievement. If, early in their junior school career, all children can read, a common education becomes a perfectly practicable proposition.

Secondly, and this point has already arisen, greater attention must be given to the content of education and to methods of

teaching the basic skills. The problem here is the evolution of new methods, adapted to the purposes of universal education, and this calls for scientific research and the exchange of experiences among teachers in unstreamed schools. There has been a considerable amount of detailed research into this matter, but a variety of different methods are still used. There are, for instance, not only different approaches to the teaching of reading, but also quite different ways of teaching arithmetic. Children learn to divide and subtract in one way in one school and in quite another in a neighbouring one. This naturally makes things difficult for both teachers and children at the secondary school. It also indicates how wide are the differences of opinion about the best methods of teaching the basic subjects. Certainly the most complex and difficult educational problems are here involved. But once more, though research must go on, some definite course should be decided upon and adhered to.

Third, and most important, the size of classes in the primary schools must be reduced to a maximum of thirty. Teachers have been putting forward this demand for years, since they, at least, are quite clear that, faced with classes of forty-five or fifty-five children, their task is virtually impossible. It is, indeed, a near miracle that illiteracy and backwardness are not more widespread to-day than they are. In the expensive preparatory schools, classes rarely exceed twenty for this age group. If these conditions are good for some children, they are good for all; they are indispensable if there is to be that modicum of individual attention which every teacher knows to be essential. At present many teachers cannot even hear all their children read once a day; there is just not time. But, though this reform is vitally necessary, it is not an absolutely essential condition for making some success in the abolition of streaming, as has been proved in practice by the example of schools which have carried this through.

What else does the child need from his junior school? First, a vivid and stimulating life, one that awakens his interests and makes demands on his energy and application. School should give the young child plenty of opportunity both for the

exercise of individual initiative and for participation in the work of a group under the guidance of the teacher. In so doing it will be providing the conditions for the development of abilities. Secondly, the junior school must introduce the child to his cultural heritage, and to a wide range of activities outside the basic subjects. This is a stage in the child's development when interest is quickened, memorising comes easily, and children are particularly lively and receptive of new ideas. Yet at present many subjects—elementary history, geography, science, in particular—are elbowed out of the timetable owing to the pressure of the selection examination.

Finally, the child needs to be taught. It may seem to the layman that this is an unnecessary point to make, but many educational theorists think otherwise, and one finds juxtaposed to the formal training of the "bright" children in the scholarship subjects an opposite method, "free activity", especially for the less "intelligent". The idea that children's learning depends entirely on innate "intelligence" has given credence to the view that, since no one can improve a child's abilities, the best thing to do is to leave him "free" to develop his own potentialities "spontaneously". The teacher, then, must abdicate his functions to the children, allowing them to follow their own interests at their own pace. This theory lies at the root of the "free activity" movement, which denies the value of the normal forms of class teaching, and relies on the child's own undirected activity as the basic form of education.

The adoption of "free activity" was a reaction from the atmosphere of the old elementary school. But, where carried to extreme lengths, it is the very negation of education. It is evident that the child cannot find out everything necessary for himself and choose his own educational path with judgment; he can only master the elements of knowledge if the school programme is systematically developed from one stage to the next. Children do not acquire social habits spontaneously, as every parent knows; they have to be taught. Moreover their insistent questions must be answered, some inclinations must be curbed, other interests must be fostered and new

horizons opened. This is the process of education as carried on in every family. In school it becomes more systematic. The task is to give each child the tools and techniques that he will need and use throughout life, to introduce him to his social heritage. It is, then, the teacher's job to teach, to provide that careful guidance and control of the child's activity which alone will enable him to master new skills and social knowledge. This is, after all, the fundamental reason for the school's existence—the provision of skilled practitioners, trained to educate each new generation of children.

The aim of the unstreamed junior school must, therefore, be to bring each age group of children up to a minimum level of achievement; not in terms of rigidly set texts, as in the old elementary school "standards", but in terms of basic skills and techniques. What this minimum level should comprise both can and should be defined, so that every school can be clear about its basic scholastic objectives.

Selection at ten makes this development impossible. The junior school can never be a common school, with a clear educational aim, for all children, until the threat of the selection examination is removed and the education and welfare of all children alike becomes the central objective. Once this is the case, the junior school will at last come into its own, as the foundation of an educational system designed to foster and develop abilities and to enable all children to make the most of their lives.

Are there Two Types of Mind?

Most people would agree, in general, with the foregoing analysis, even if they have reservations about particular points. But once secondary education comes into the picture real differences arise. Former practices and preconceived ideas of various kinds now begin to cloud judgment. Secondary education has, for long, begun at eleven. This age, it is often argued, marks a critical stage in the child's development. Those who uphold the theories of mental testing, using their own terminology, suggest that at about the age of eleven, individual differences become so great that a common

education is impossible. While the "average" or "below-average" child, they contend, is incapable of abstraction and generalisation,¹ the highly intelligent, or "brilliant", child thinks naturally in abstractions. For the good of both, for the good of the country, these different "intelligence" levels must be separated. There must be two or more kinds of school.²

But there is nothing sacrosanct about the age of ten or eleven. Children do not suddenly alter and become qualitatively different beings. On the contrary, the early age of ten became the age of transfer from the junior school mainly because of the leaving age of fourteen. In fact, it had already become established by the beginning of this century, though at that time it was not thought necessary to advance psychological theories to support the practice. Nor is it true that children can be divided, either at this age or any other, into two distinct groups; those who are and those who are not capable of abstract thought; those who learn through books and those who can only learn through "activities"; those who need the aid of concrete examples and those who can do without them.

These theories result, once more, from questionable psychological—and even philosophical—doctrines about the nature of language and thought and their relationship. In fact, every child who uses words is demonstrating that he is capable of generalisation and abstraction. Words like "table", "chair", "engine", refer to a whole group of similar objects, not only to a single concrete thing. With the development of speech, the child learns to represent to himself and to others general ideas as to the properties of the things to which he refers. He begins to perceive the essential similarities and

¹ "For normal or sub-normal children, natural endowment limits the number of things which they can do; for many of them the basic skills are as much as we can expect". Dr. Eric James, High Master, Manchester Grammar School. He adds, "with the brilliant person there is no such self-limitation", *Education and Leadership*, 1951, 54.

² As is argued, for instance, in the Ministry of Education Pamphlet No. 9 (*The New Secondary Education*, 1947), and in the Norwood Report (*Curriculum and Examinations in Secondary Schools*, 1943); though the conclusions of the latter are not directly based on the theories of mental testing.

differences between the qualities of things and of people: "this pillow is hard, that soft", "these sums are difficult, those are easy". This development is common to all children.

As he grows older, the child's knowledge of reality extends, and with it his ability to express this knowledge in the form of words. The degree of development naturally depends mainly on his education and his experience, but all children begin to perceive more and more complex relations between things and events; their thinking acquires greater depth, their ability to generalise and to understand abstract ideas becomes more marked. It is by systematic teaching, wide reading, and especially the mastery of language that children can be assisted in this development.

The child's capacity for abstraction and generalisation reaches a higher stage as he grows towards adolescence, if he is given opportunities for study and for exercising his mind. But, of course, this development does not take place in a vacuum. If no demands are made upon young people, at school or at work, if they have no guidance or serious education, then they are unlikely to become theoretical mathematicians or philosophers. It is only because children have always been selected at the age of eleven, and thereafter given very different kinds of treatment, that it is possible to argue that there are qualitatively different types of mind.

The idea that there are two quite different types of mind, one capable of coping with abstractions and the other earth-bound and unable to rise into the sphere of abstract thought, gives rise to the theory that there must be two different types of teaching at the secondary stage; in the grammar schools intelligent children can grasp ideas imparted to them verbally without difficulty; in the modern schools average children must be approached through the senses with plenty of concrete examples, and it is unlikely that they will be able to grasp a systematic and reasoned argument.

This conception is strongly at variance with all that is known of the human understanding. All thought needs the aid of representation, sometimes of concrete objects, sometimes of symbols. This point itself can be made clearer by an

illustration. No child or adult can easily grasp how an internal combustion engine works if nothing but a verbal explanation is forthcoming. In addition to theoretical instruction, it is necessary to see an engine operating, and, if possible, to examine a model cut down the centre which exposes the inner processes. It will help if diagrams are available of the more complex parts, and yet other aids could be used. But no one is likely really to master an internal combustion engine until he has taken one or more to pieces with his own hands and reassembled them himself.

Even the most "brilliant" must go through these mundane stages if they are to learn in any real sense of the word. Nor is it only in the scientific subjects that these considerations apply. In the study of history, geography, literature, the child has to form ideas about people and things outside himself, even those which belong to the past. Will he not form these ideas more correctly, the more concretely they are represented to him?

No one would seriously disagree with most of these propositions and there are, of course, grammar schools which teach science effectively and are quite prepared to use visual and other aids for other subjects as well. But in so doing, they undermine the theory that there is a gulf fixed between learning in the abstract, and learning through practice and concrete examples; that the former is proper to the "highly intelligent" and the latter to the "average" child. Yet it is this facile conception, which, translated into practice, vitiates much of the work of grammar and modern schools alike; the former, attempting to teach on purely formal lines, take the life out of knowledge, the latter, attempting to teach solely through practical activities, take the knowledge out of life. Such, at any rate, are supposed to be their respective spheres, though the underlying theory is belied by the practice of the best teachers in both types of school.

In reality, all human beings learn in a broadly similar way. While the human learning process differs qualitatively from that of the animals, there is no qualitative difference between different classes of men. All learn by relating theory

and practice, thought and activity. There is no basis here for differentiating between children at ten.

Only if it could be shown to be essential that children aged eleven to fifteen learn different things, could it be maintained that they should be educated in different schools. But it is generally agreed that there ought not to be intensive specialisation at this stage, that during these years all children should be having a broad general education. In practice, in spite of important differences in approach and in the content of the subjects taught, the main elements of the curriculum up to fourteen or fifteen are similar in all schools.

Both modern and grammar schools include in their curriculum those subjects which cover the main areas of knowledge; language and literature, mathematics, science, history and geography, art, music and practical work of various kinds. In many modern schools a foreign language is included. The only subject in which the grammar schools have a monopoly is classics, and this for obvious reasons.

There is, therefore, general agreement that these subjects, should comprise the common core of education for all children. Once it is recognised that there are no good grounds for separating children according to "innate ability", "intellect", "capacity", or "power of abstract thought", all that remains to be done is explicitly to recognise this position; to sweep away the selective system of secondary education, and to establish a common secondary education in a common school.

The Comprehensive School

A number of local education authorities, taking advantage of their powers under the 1944 Education Act, are beginning to establish common secondary schools, in spite of the many difficulties which are put in their way. There are, however, important differences of opinion about the organisation of the common school.

(1) There is first the opinion that, within the common secondary school, there should be three distinct streams, corresponding to the grammar, technical and modern schools, in which different types of education should be given. A school

organised in this way is usually called a "multilateral" school.

Although the multilateral school is, in outward form, a common school, its internal structure corresponds exactly to the existing divisions in secondary education. The children have to be selected for one of the three streams at or before entry, so that a school organised in this way, though mitigating some of the disadvantages of separate schools, does not overcome the major problem, that of selection at ten; at best, in those multilateral schools which provide a relatively common course for the first two years, it makes the transfer of children between different streams at thirteen easier. But the multilateral school, by definition, does not aim to give a common secondary education.

(2) The second point of view, to-day more general, is that the common secondary school should provide the same type of education for all children; a school organised in this way is usually called a comprehensive school. But there are differences of opinion about the organisation of the comprehensive school. Some educationists believe that special provision should be made so that individual children can, "go at their own pace", or "be given every opportunity of working to the full extent of their capacity". In order to ensure this there should be a wide variety of optional subjects on which a considerable amount of time should be spent.

This form of organisation implies that the child is allocated to different classes for different subjects, and moves from class to class according to his individual achievement. He may, for instance, be grouped with advanced pupils in mathematics and with backward pupils in French, and he has, besides, the chance of taking or dropping other subjects.

The primary aim here is to achieve a flexible organisation. But the main emphasis within the school is placed not so much on common subjects and the achievement of a basic standard by all children, as on individual choice of subjects and individual mobility. The provision of many optional subjects, some of which may be chosen by some children and some by others, is an indication of the individualist nature of this conception.

In practice, though the aim is flexibility, time-tables

organised on this principle cannot but become rigid, at least with present staffing ratios. Moreover, this method of organisation, based to some extent on the practice of the American high school, has certain evident disadvantages. Underlying it is the axiom that children, entering school at eleven, have differing innate "abilities" which they must be allowed to develop in their own way; hence the personal choice of subjects or courses and the allowance for children to work at different rates according to the horsepower of their internal "intelligence" engines, which must—so it is supposed—determine their rate of work.

Apart from its practical disadvantages, this form of organisation also breaks up the unity of the school. Carried to its logical conclusion it amounts to a denial of the role of the teacher and of any clear purpose for universal education. That purpose must be to teach children *how* to study effectively and how to work with others, in the course of an educational programme which effectively covers the main areas of knowledge. This should be the aim for all children; it cannot be achieved so long as the school is organised on individualist and competitive lines.

(3) But there is another way of organising the comprehensive school, one which accords fully with democratic objectives. That is to provide every child with the opportunity of following the same basic curriculum up to the age of fourteen or fifteen, and to lay the emphasis on this common core of teaching. At this age, after nine or ten years of schooling and the opportunities of learning, of reading widely, and of developing abilities, most children will be ready to take the decisive step of choosing their future career. Only at this age, then, should differentiation of subject matter for specifically vocational purposes begin, though the greater part of the curriculum should still remain common to all pupils. By this time all children should have reached a good standard of general education.

The experience of eastern European countries, and in particular of the U.S.S.R., shows that this is a practical objective. In the U.S.S.R. all children in the main urban

centres will receive a common education up to the age of seventeen or eighteen by 1955; these conditions will be general throughout the country by 1960. It is the opinion of Mr. G. C. T. Giles, a grammar school headmaster who visited the U.S.S.R. with an educational delegation in 1952, that "the standard of the ten-year school corresponds very closely to the old matriculation standard in Britain". He goes on: "If this estimate is justified, it means that the majority of Soviet children now reach, by the age of seventeen, an academic standard approximately equal to that reached by our grammar school children a year younger. In ten years' time, practically all Soviet children will do so."¹

The significance of this achievement is immense. It is a practical verification that all children *can* be educated, and up to a far higher standard than has hitherto been thought possible. The evidence quoted in Chapter IV points to the possibility of achieving the same result in this country, though this must—to a very considerable degree—depend also on greater equality of opportunity in the choice of careers.

The Soviet success is the result of stressing the formative role of teaching and education. In Russia, as in this country, mental testing began to dominate the schools in the 1920's. But the practice was abolished in 1936, and since then, responsibility for education has been fully restored to the teachers. They have been expected to arouse and maintain the interest of their pupils, to develop new abilities, and, in particular, to work out and apply new methods of teaching adapted to the purpose of universal education. There is no streaming in Soviet schools; each child covers the same basic educational course.²

¹ G. C. T. Giles. "Why Soviet Teachers oppose Intelligence Tests," *Anglo-Soviet Journal*, Vol. XIV, No. 1, Spring, 1953.

² The Soviet decree abolishing the practice of intelligence testing in schools is published in full in *Soviet Psychiatry* (1950) by J. Wortis, also in *Moscow in the Making* (1937) by Sir Ernest Simon and others. The decree gives the main reasons for this step. For a discussion of the Soviet standpoint on this issue, and of later developments in Soviet psychology, cf. the author's *Educational Psychology in the U.S.S.R.* (1952). (Available from the Secretary, Society of Cultural Relations with the U.S.S.R., 14 Kensington Square, London, W.8, price 2s. 6d.)

This form of organisation can be adopted in this country also, though pressures on the comprehensive school will inevitably produce initial difficulties. But a start can and must be made, if we are to transform our educational system, in accordance with the 1944 Act, into a system genuinely providing "secondary education for all".

The main practical difficulty at first will be the pressure on the schools from the university. It is almost impossible for anyone to win a place at a university at present unless he is picked young, placed in a "fast" stream, and crammed in a narrow field of studies. This is the normal practice to-day in the grammar schools though it is condemned on all hands, in particular by most grammar school headmasters and university teachers. There will be obstacles to relieving over-specialisation in the secondary school, from which the children are the chief sufferers, until higher education itself is unified and much expanded, and until this country makes up its mind that it can afford to lengthen the normal university course from three to five years, as is now the practice in Eastern and Western Europe, America and the U.S.S.R.

The comprehensive school will face its most difficult problems in the first few years, since its annual intake will initially consist of children who have suffered from streaming in the junior school. This will have created wide differences in educational attainment, and the school may be forced to take this into account. But once a common secondary education is established, the pressure to stream the local junior schools will be lifted. If these go ahead in the way outlined earlier in this chapter, then it is reasonable to expect that standards of achievement will be raised all round; after four years a group of children will enter secondary school who have never known what selection, testing, differentiation or streaming is, and whose attitude to education will be revolutionised accordingly.

Objections to the Comprehensive School

This, in brief, is the case for the comprehensive school. But in spite of its fundamentally humanist objectives, this conception

is frequently held up to obloquy as doctrinaire. Those who advocate it are accused of attempting to fasten a dull uniformity on the schools, even of wishing to stamp out all individuality, and it is argued that they ignore all educational considerations.

It is unnecessary to argue the latter point; it has already been made clear that the case for the comprehensive school is based primarily on educational grounds. Nor do the other propositions stand up to serious analysis. Both the public and the grammar schools to-day give a common education to all their pupils, within the limits laid down by streaming, and this is recognised as the essential equipment of the educated person. The claim for diversity of education at the secondary stage is to-day an argument for the retention of privilege, couched in educational terminology, and grounded on the findings of "intelligence" testing. In practice, there is little diversity of education; there are only different measures of opportunity in different types of school. It is the "type" of school which marks the child for the rest of his life, and counts far more than his individual qualities in deciding his future achievement. On the other hand, it is evident that in our complex society, the higher the educational level the greater the individual's opportunity to express his personality.

There are some who oppose the comprehensive school on grounds of expediency. The grammar schools, they say, provide an education for clever working-class children equivalent to that provided for the children of the wealthy in the public schools; to "abolish" the grammar schools would, therefore, be a step backwards, it would reduce the opportunity of the working-class child.

No democrat can accept an argument which takes class privilege for granted, and assumes that the success of the few can only be attained at the expense of the many. So long as competition and selection remain, so long does the education of *all* children suffer; both that of the minority who are selected and of the majority who early drop out of the race. The only way of increasing opportunity for working-class children in general is by creating the conditions for educating *all* children at the secondary stage. These conditions do not

exist to-day and cannot be created in the absence of a unified system of secondary schools.

Nevertheless, the problem of the "public" schools remains. These have no parallel in any other country in the world; they confer initial privileges on certain children regardless of intellect or worth, which it is impossible to justify. Pupils from these schools, partly owing to smaller classes and better facilities, partly owing to their ability to pay their way at the university, and to special links with Oxford and Cambridge colleges, fill a disproportionate amount of university places. While this continues, the common secondary school will be faced with sharp competition which will prevent it from developing a broad, human education. To make a unified educational system, with all its advantages for the mass of the people, a practical possibility, the public schools will have to go. Indeed, there is no place for these schools in a democratic system of education.

But will the unified secondary school lead, as is so often claimed, to the "destruction" of all that the grammar schools have stood for, and, in particular, to the penalising of the "brilliant" child? On the contrary, one of the main defects of the present educational system is the treatment it accords to the early developer. The child who early shows promise, who manages to jump the various hurdles that straddle the road from junior school to university, is rushed through his courses at a high speed, inevitably keeping to a narrow and closely defined path. Concentration on the scholarship at ten is followed, admittedly, by a year or two of more general education in most grammar schools; but in others the child has to make a choice between various specialisations on entry, in other words he must opt for classics, science or modern subjects at the age of ten or eleven. As soon as possible, usually at fourteen or fifteen, he drops most of the subjects not essential to him for future examinations, even such important subjects as history, geography, and foreign languages. At the age of sixteen the young scientist's curriculum may, and frequently does, consist of nothing but pure and applied mathematics, physics and possibly chemistry, leavened only by a couple of

periods in English and scripture with possibly a weekly talk on "philosophy" by the headmaster. At the same time the exigencies of the examination syllabus require a narrow concentration on the subject matter in the main fields of study chosen. Anyone who has had some experience of teaching in grammar school sixth forms knows that this system not only puts a tremendous strain on young people, but also fails to educate them in any true meaning of the term. The teacher sighs for more time and leisure with his pupils, free from the care of decisive examinations ahead. He realises with dismay that his pupils often go on to the university ignorant in many important respects. His forecast that many of the children are being tried beyond their powers seems to be borne out by the relatively high proportion of nervous disorders among university students and the high suicide rate at the universities.¹

For this state of affairs the universities themselves are, to some extent, responsible; their entrance requirements must be broadened if the schools are to be freed to give a general education to all their pupils. But in the comprehensive school as outlined here, the early developer would not be forced ahead, learning more and more facts in an ever narrowing context. He would be given the chance of developing more evenly, with a more general background and a greater width of study, and with more time available to devote to his own interests, music, drama, painting, or whatever they may be. But, of course, no school can contract out of a fundamentally competitive system. Although the establishment of a few common secondary schools is certainly a step forward, only if comprehensive schools are established throughout the country can the present pressures be relieved, and these schools enabled fully to prove their worth.

¹ For instance, Dr. Parnell, until recently Physician in charge of the Student Health Survey at the Institute of Social Medicine at Oxford, has reported that the suicide rate at Oxford University is "far higher than for any other class of similar age, military or civil, in the country." He also found, in a three-year survey, that seventy-six undergraduates were absent from the University for a full term on account of mental illness or nervous breakdown. cf. *Times Educ. Supp.*, April 3, 1953. See also Report of Home Universities Conference, 1951.

The final objection to the comprehensive school is based on the supposition that these schools must be of enormous size; that is, even bigger than some of the better known secondary grammar schools such as Manchester (1,350), Bristol (1,043), Bradford (975). Some people hold that this is necessary if comprehensive schools are to provide a wide variety of highly specialised teaching in the sixth form.

But if, in the new comprehensive school, the emphasis is put on a common education this argument no longer carries much weight; the aim must be to reduce the high degree of specialisation which is, in any case, educationally undesirable. Even under present conditions, comprehensive schools need not be large. The Scottish "omnibus" school, a form of common school, often has only 400 pupils, or even less, and is still able to provide for sixth form study and to prepare children effectively for the university. The Scottish Advisory Council on Education in Scotland proposed that such schools should normally number about 800.¹ In England, one local authority at least has plans for comprehensive schools of 600 and less. Certainly the L.C.C. schools are large, but the main reason for this lies in the difficulty of procuring sites in a huge conurbation. Under normal conditions there is no reason whatsoever why the comprehensive school, as outlined above, should be any larger than many existing grammar, secondary modern and all-age schools.²

Secondary Education for All

Some of the more usual objections to the comprehensive school have now been considered. But the underlying argument is, of course, that the majority of children are not capable of profiting from a systematic secondary education. Whatever form this argument takes, whether it is a denigration of the average working-class child, who has never been given a chance to prove his powers, or a defence of the "brilliant" child whose race to the front would be impeded by the

¹ *Secondary Education*. A Report of the Advisory Council on Education in Scotland, 1947, 39, 40.

² For a full discussion of this question, see Lady Simon, *Three Schools or One*, 1948, 77-83.

presence of slower contemporaries, it will be found to depend upon the theories drawn from intelligence testing; theories which have been derived, in part, from the very limitations of the present educational system.

These theories, it has been admitted, were first evolved because "the immediate needs of applied psychology call for working hypotheses and some practical device for determining the key-characteristics of individuals".¹ Psychometrists themselves are fully aware that the mathematical techniques of research used to isolate intellectual "abilities" result in "crude distinctions", and that they may eventually turn out to be "a mere makeshift—a temporary expedient which we may conveniently exploit while awaiting a more refined experimental technique."² It is on the results of research described in this way that the theories criticised in this book are based; yet these theories are, in the last analysis, the *only* justification of the divided educational system.

Thirty years ago, when the Labour movement first put forward the demand for secondary education for all, it rejected with contempt the idea—concretely embodied in the school system—"that the mass of the people, like anthropoid apes, (have) fewer convolutions in their brains than the rich".³ To-day this idea, an idea as old as class society itself, has been given new currency in a form which is far more difficult to challenge; it has been forced on the public as an inescapable scientific truth.

It has been the object of this book to show the failure of intelligence testing to establish itself as a science. Educational administrators and teachers are beginning to be seriously concerned, not only about the fairness of the selection system but also about the effect of testing on education; parents have also been growing increasingly restive. This general concern has not hitherto been translated into a general demand that selection be abolished because the nature of tests has not been clearly grasped. Some directors of education do not understand what exactly tests are, and how results are worked out; nor do members of education committees, though they

¹ Burt, *The Factors of the Mind*, 12. ² *Ibid.* ³ *Secondary Education for All*, 33.

assure parents, in perfect good faith, that the particular system adopted in their area is the fairest and most objective that can be devised, adding, no doubt with truth, that an enormous amount of time and money has been spent to ensure that this is so.

The real truth of the matter is that there is no fair or objective method of selection at ten, and that the present system results not only in individual heartbreak but also in disastrous wastage of ability from the social point of view. Moreover, the theories based on "intelligence" testing, theories which preach the limitation of human powers, the decline of "intelligence" and the helplessness of men in the face of their inherent defects, stand like a barrier in the way of real educational advance. These must be rejected, and with them the divided system of education which they serve and justify.

Instead, let us recognise that the most valuable capital of society is *people* and that the most important task to-day is to provide for the youth of this country the conditions for healthy, human development and the exercise of ability. One of the most important first steps towards this end—a step which can be taken immediately if we have the courage and conviction—is the establishment of a genuinely democratic system of education.

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